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The Divinity School
1968

BULLETIN OF DUKE UNIVERSITY

Annual Bulletins

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BULLETIN OF DUKE UNIVERSITY

The Divinity School

1968

Durham, North Carolina 1968

Table of Contents

Calendar *v*
General Administration *vii*
Faculty *ix*
Divinity School Committees *xii*

General Information 1

Courses of Study and Requirements for Degrees 4
Divinity School Degree Programs 4
Graduate School Courses 5
Master of Divinity Degree 6
Regular Program 6
Honors Program 9
Independent Studies Program 11
Administration of the Curriculum 13
Master of Religious Education Degree 19
Master of Theology Degree 20

Programs of Continuing Education 22
Divinity School Seminars 22
Henry Harrison Jordan Loan Library 23
Duke Divinity School Summer Clinics 23
School for Supply Pastors 24
Consultation on Task of Theology Today 24
Other Programs 25

Resources for Study 27
Library Resources 27
Corporate Worship 28
Public Lectures 29
Lectures and Symposia 29

Community Life 31
Divinity School Choir 31

Coordinating Council for Community Life 31
Other Organizations 32
Publications 32

Admission 34
Requirements and Procedures 34
Pre-Seminary Curriculum 36
Transfer of Credit 36
Advanced Standing 37
Admission on Probation 37
Ministerial and Professional Qualifications 38

Financial Information 40
Fees and Expenses 40
Student Health 42
Living Accommodations 42
Motor Vehicles 44
Student Aid 45
Financial Resources 46
Financial Aid Resources 48

Field Education 52

Summer Session 54

Courses of Instruction 56
Degrees Conferred, 1967 74
Enrollment, 1967-68 76
Graduate Enrollment 1967-68 84
Enrollment Summary 86

Calendar of the Divinity School

1968

September

12 Thursday—Dormitories open for occupancy
14 Saturday—Junior Orientation begins
16 Monday, 12:30 p.m.—Faculty luncheon
16 Monday, 4:00 p.m.—Faculty meeting
17 Tuesday, 9:00 a.m.-1:00 p.m.—Registration of returning students
17 Tuesday, 9:00 a.m.-1:00 p.m.—Photographing of new students
17 Tuesday, 9:30 a.m.-10:30 a.m.—Library tours for new students
17 Tuesday, 2:00 p.m.-5:00 p.m.—Registration of new students
17 Tuesday, 7:00 p.m.-9:00 p.m.—Testing of new students
18 Wednesday, 9:00 a.m.-1:00 p.m.—Completion of registration
18 Wednesday, 9:00 a.m.-11:00 a.m.—Library tours for new students
18 Wednesday, 2:00 p.m.-5:00 p.m.—Testing of new students
18 Wednesday, 7:00 p.m.-9:00 p.m.—Testing of new students
18 Wednesday, 8:00 p.m.—University Convocation
19 Thursday, 8:10 a.m.—Fall semester classes begin
19 Thursday, 10:10 a.m.—Opening Convocation
25 Wednesday—Last day for changing courses for the fall semester

October

28–30 The Christian Convocation and Gray Lectures

November

27 Wednesday, 5:30 p.m.—Thanksgiving recess begins

December

2– 9 Pre-registration
2 Monday, 12:00 noon—Classes resume
11 Wednesday—Founders' Day
20 Friday, 5:00 p.m.—Christmas recess begins

1969

January

6 Monday, 8:10 a.m.—Classes resume
8–9 Wednesday, Thursday—Registration of resident students for spring semester
10 Friday—Fall semester classes end
14 Tuesday—Final examinations begin
24 Friday—Final examinations end
28 Tuesday—Registration of new students
30 Thursday, 8:10 a.m.—Spring semester classes begin

February

5 Wednesday—Last day for changing courses

March

21 Friday, 5:30 p.m.—Spring recess begins
31 Monday, 8:00—Classes resume

April

1–10 Pre-registration for fall semester
30 Wednesday, 12:00 noon—Dean's luncheon for senior class

May

14 Wednesday, 11:00 a.m.—Closing Convocation
16 Friday, 5:30 p.m.—Spring semester classes end
19 Monday, 2:00 p.m.—Final examinations begin
28 Wednesday, 5:00 p.m.—Final examinations end
30 Friday, 10:30 a.m.—Faculty meeting
30 Friday, 12:30 p.m.—Faculty luncheon
31 Saturday—Commencement begins

June

1 Sunday, 11:00 a.m.—University Baccalaureate service
1 Sunday, 7:45 p.m.—Divinity School Baccalaureate service
2 Monday—Commencement—conferral of degrees

General Administration

Douglas Maitland Knight, Ph.D., LL.D., Litt.D., L.H.D., *President of the University*
Robert Taylor Cole, Ph.D., *Provost*
Frank Leon Ashmore, A.B., *Vice President for Institutional Advancement*
Gerhard Chester Henricksen, M.A., C.P.A., *Vice President and Treasurer*
Everett Harold Hopkins, M.A. LL.D., *Vice President for Regional Programs, Assistant Provost*
Charles B. Huestis, *Vice President for Business and Finance*
Barnes Woodhall, M.D., *Associate Provost*
Frank Traver de Vyver, Ph.D., *Vice Provost*
Harold Walter Lewis, Ph.D., *Vice Provost and Dean of Arts and Sciences*
Richard Lionel Predmore, D.M.L., *Vice Provost and Dean of the Graduate School of Arts and Sciences*
Craufurd David Goodwin, Ph.D., *Assistant Provost*
Robert L. Dickens, M.S., C.P.A., LL.D., *Acting Assistant Provost*
William J. Griffith, A.B., *Assistant to the Provost in the Area of Student Affairs*
Benjamin Edward Powell, Ph.D., *Librarian*
Richard Lovejoy Tuthill, Ed.D., *University Registrar*
Rufus H. Powell, LL.B., *Secretary of the University*
Stephen Cannada Harward, A.B., C.P.A., *Assistant Secretary and Controller*
Edwin Constant Bryson, LL.B., *University Counsel*

Educational Administration

Robert E. Cushman (1945), B.D., Ph.D., L.H.D., *Dean of the Divinity School*
Donald J. Welch (1965), B.D., *Assistant Dean for Admissions and General Administration*
Osmond Kelly Ingram (1959), B.D., *Dean of Students*
Fletcher Nelson (1964), B.D., D.D., *Assistant to the Dean for Development*

Helen Mildred Kendall (1950), A.B., *Administrative Assistant and Registrar*
Daniel M. Schores, Jr. (1965), B.D., Ph.D., *Director of Field Education and Campus Internships*
Shirley O'Neal, *Administrative Secretary to the Dean*

Division of Advanced Studies

Waldo Beach (1946), B.D., Ph.D., *Director of Graduate Studies in Religion*

Division of Special Studies

Richard A. Goodling (1959), B.D., Ph.D., *Director of Programs in Pastoral Psychology*
P. Wesley Aitken (1963), B.D., Th.M., *Director of Clinical Pastoral Education*
Donald S. Williamson (1966), B.D., Ph.D., *Director of Pastoral Counseling*
William Arthur Kale (1952), B.D., D.D., *Director of the Master of Religious Education Program*

Library

Donn Michael Farris (1950), B.D., M.S. in L.S., *Librarian*
Harriet V. Leonard (1960), B.D., M.S. in L.S., *Reference Librarian*
Carolyn London, *Circulation Librarian*
Mary Kate Wohlwend, *Assistant Circulation Librarian*

Secretarial Staff

Mary P. Chestnut, *Faculty Secretary*
Vivian P. Crumpler, *Faculty Secretary*
Rose Marie Davis, A.B., *Secretary to the Director of Graduate Studies in Religion*
Marie H. Dixon, *Secretary for the Rural Church*
Martha M. Duplissey, *Faculty Secretary*
Joan L. Lunsford, *Secretary to the Registrar*
Betty A. Martin, *Faculty Secretary*
Audrey F. Radovich, *Secretary to the Assistant Dean*
Patricia Smith, *Secretary to the Dean of Students*
Iris D. Zimmerman, *Secretary to the Director of Field Education*

Faculty

Frank Baker (1960), B.D., Ph.D., *Professor of English Church History*
Waldo Beach (1946), B.D., Ph.D., *Professor of Christian Ethics*
*James T. Cleland (1945), M.A., S.T.M., Th.D., D.D., *James B. Duke Professor of Preaching*
Robert E. Cushman (1945), B.D., Ph.D., L.H.D., *Professor of Systematic Theology*
William David Davies (1966), M.A., D.D., F.B.A., *George Washington Ivey Professor of Advanced Studies in New Testament and Christian Origins*
**James Michael Efird (1962), B.D., Ph.D., *Associate Professor of Biblical Languages and Interpretation*
Donn Michael Farris (1950), B.D., M.S. in L.S., *Associate Professor of Theological Bibliography*
Richard A. Goodling (1959), B.D., Ph.D., *Professor of Pastoral Psychology*
Egil Grislis (1959), B.D., Ph.D., *Associate Professor of Historical Theology*
***Thor Hall (1962), B.D., M.R.E., Ph.D., *Associate Professor of Preaching and Theology*
Stuart C. Henry (1959), B.D., Ph.D., *Professor of American Christianity*
Frederick Herzog (1960), Th.D., *Professor of Systematic Theology*
Hans J. Hillerbrand (1959), Ph.D., *Professor of Modern European Church History*
Osmond Kelly Ingram (1959), B.D., *Associate Professor of Applied Theology*
William Arthur Kale (1952), B.D., D.D., *Professor of Christian Education*
Creighton Lacy (1953), B.D., Ph.D., *Professor of World Christianity*
†M. Wilson Nesbitt (1958), B.D., D.D., *Associate Professor of the Work of the Rural Church*

*Retires August 31, 1968.
**Sabbatical Leave, Spring Semester, 1969.
***Sabbatical Leave, 1968-69.
†Resignation, effective June 30, 1968.

Ray C. Petry (1937), Ph.D., LL.D., *James B. Duke Professor of Church History*

*William Hardman Poteat (1960), B.D., Ph.D., *Professor of Christianity and Culture*

McMurry S. Richey (1954), B.D., Ph.D., *Professor of Theology and Christian Nurture*

Charles K. Robinson (1961), B.D., Ph.D., *Associate Professor of Philosophical Theology*

Charles Allen Rogers (1965), B.D., Ph.D., *Assistant Professor of Historical Theology*

John Jesse Rudin, II (1945), B.D., A.M., Ph.D., *Associate Professor of Speech and Worship*

Daniel M. Schores, Jr. (1965), B.D., Ph.D., *Assistant Professor of Church and Society*

Dwight Moody Smith, Jr. (1965), B.D., Ph.D., *Associate Professor of New Testament Interpretation*

*Harmon L. Smith (1962), B.D., Ph.D., *Associate Professor of Moral Theology*

William Franklin Stinespring (1936), M.A., Ph.D., *Professor of Old Testament and Semitics*

Gene M. Tucker (1966), B.D., Ph.D., *Assistant Professor of Old Testament*

Donald S. Williamson (1966), B.D., Ph.D., *Associate Professor of Pastoral Psychology*

Franklin Woodrow Young (1968), B.D., Ph.D., *Professor of New Testament and Patristic Studies*

Visiting Faculty

Charles Lynvel Rice (1966), B.D., S.T.M., Ph.D., *Visiting Assistant Professor of Homiletics*

Associates in Instruction

P. Wesley Aitken (1963), B.D., Th.M., *Chaplain Supervisor, Duke Medical Center and Assistant Professor of Clinical Pastoral Education of the Divinity School*

Robert B. Claytor (1963), B.D., Th.M., *Chaplain, Duke Medical Center and Instructor in Clinical Pastoral Education*

John C. Detwiler (1966), B.D., Th.M., *Acting Chaplain Supervisor, Duke Medical Center and Instructor in Clinical Pastoral Education*

John C. Fletcher (1968), B.D., *Lecturer in Church and Society*, Assistant Professor of Church and Society, Virginia Theological Seminary

John Kennedy Hanks (1954), M.A., *Lecturer in Sacred Music and*

*Sabbatical Leave, 1968-69.

Director of the Divinity School Choir, Professor of Music, Duke University

M. Wilson Nesbitt (1958), B.D., D.D., *Adjunct Associate Professor of the Work of the Rural Church*

Allen Freeman Page (1964), B.D., *Instructor in New Testament*

Harry B. Partin (1964), B.D., Ph.D., *Lecturer in History of Religions,* Assistant Professor of Religion, Duke University

Donald W. Schriver, (1968), B.D., S.T.M., Ph.D., *Lecturer in Church and Society,* Associate Professor of Church and Society, Union Theological Seminary in Richmond

William C. Spong (1965), B.D., Th.M., *Acting Chaplain Supervisor, Duke Medical Center, and Lecturer in Clinical Pastoral Education*

Herbert P. Sullivan (1960), B.D., Ph.D., *Lecturer in History of Religions,* Associate Professor of Religion, Duke University

Orval Wintermute (1959), B.D., Ph.D., *Lecturer in Old Testament,* Associate Professor of Religion, Duke University

Teaching Assistants

Benjamin Ladner (1966), B.D., *Teaching Assistant in Preaching*

Richard P. Heitzenrater (1968), B.D., *Teaching Assistant in Church History*

Emeriti

Kenneth Willis Clark (1931), B.D., Ph.D., *Professor of New Testament and Co-Director of the International Greek New Testament Project*

Hiram Earl Myers (1926), S.T.M., D.D., *Professor Emeritus of Biblical Literature*

H. Shelton Smith (1931), Ph.D., D.D., Litt.D., *James B. Duke Professor Emeritus of American Religious Thought*

Hersey Everett Spence (1918), A.M., B.D., D.D., Litt.D., *Professor Emeritus of Religious Education*

Arley John Walton (1948), B.S.L., D.D., *Professor Emeritus of Church Administration and Director of Field Work*

Divinity School Committees

Administrative

Policy and Appointments: Cushman, *ex officio;* Beach, Grislis, Henry, Kale, Petry, Richey, Stinespring

General Administration: Cushman, *ex officio;* Farris, Ingram, Kale, Nesbitt, Schores, Welch, all *ex officio*

Admissions: Cushman, *ex officio;* Efird, Robinson, Schores, Williamson with Ingram, Kendall, Welch, *ex officio*

Registration and Advanced Standing: Stinespring, Robinson, Kendall, Welch

Scholarships and Financial Aid: Cushman, *ex officio;* Ingram, Kale, Schores, Welch, Nesbitt (*consultant*)

Ministerial and Professional Qualifications: Ingram, *ex officio;* Welch, Schores, Williamson, Young

Library: Farris, *ex officio;* Baker, Grislis, Petry, Rogers, Tucker

Academic

Academic Administration: Cushman, *ex officio;* Henry, Goodling, Ingram, Kale, Richey, Welch

Academic Standing: Cushman, *ex officio;* Efird, Ingram, Schores, Stinespring, Welch and Kendall

Curriculum: Richey, Davies, Goodling, Henry, Herzog, Hillerbrand, Lacy, Robinson, M. Smith, Stinespring, Young

Continuing Education: Welch, *ex officio;* Henry, Nelson, Richey, Nesbitt (*consultant*)

Field Education, Endowment, and Internship: Kale, *ex officio;* Goodling, Ingram, Richey, Schores, Nesbitt (*consultant*)

Honors, Independent Studies, and Area Concentration: Henry, Ingram, Beach, M. Smith, Welch

Master of Religious Education: Kale, *ex officio;* Lacy, Richey

Joint and Special Committees

Alumni Affairs: Ingram, *ex officio;* Nelson, M. Smith, Welch
Chapel Worship: Kale, Henry, Rudin, Robinson, Rogers
Community and Social Events: Ingram, Hillerbrand, Kale, Lacy, Robinson, Rudin, Schores, Welch
Convocation and Pastors' School: Richey, *ex officio;* Nelson, Welch
Divinity School Review: Lacy, Baker, Efird, Farris, Robinson, Rogers, Tucker
Lectures and Public Events: Henry, Baker, Davies, Kale, Lacy, Richey, Welch, Young
James A. Gray Lectures: Henry
Divinity School Seminars: Richey, Kale
Assemblies and Special Occasions: Welch, *ex officio*
Missions Symposium: Lacy
School for Approved Supply Pastors: Ingram, *ex officio;* Kale, Welch
St. Michael's (Dumfries) *Associates:* Grislis, Ingram, Stinespring, Williamson

The Chairman of Committees report to the Dean and at least annually to the Faculty of the Divinity School, or whenever business requires.

A quorum obtains when two-thirds are present and voting.

Faculty members on sabbatical leave for the full year are not listed on committees.



General Information

Historical Statement

The Indenture of Trust signed on December 11, 1924, by Mr. James B. Duke, which established Duke University, mentioned first among its objects the training of ministers of the Gospel. The Divinity School was, accordingly, the first of the graduate professional schools to be organized. Its work began with the year 1926-1927, the formal opening exercises being held on November 9, 1926.

The Reverend Doctor Edmund Davison Soper was the first Dean of the Divinity School. He resigned in 1928 to become President of Ohio Wesleyan University, and was succeeded by the Reverend Doctor Elbert Russell, and the latter in turn in 1941 by the Reverend Doctor Paul Neff Garber. In 1944, Dean Garber was elected to the episcopacy of The Methodist Church, and Doctor Harvie Branscomb assumed the duties of the Dean's office. In 1946, Dean Branscomb became Chancellor of Vanderbilt University, and in 1947 the Reverend Doctor Paul E. Root was elected Dean but died before he could assume the office. The Reverend Doctor Harold A. Bosley became Dean in 1947 and resigned in 1950 to become the pastor of the First Methodist Church, Evanston, Ill. The Reverend Doctor James Cannon was appointed Dean of the Divinity School, March 1, 1951. After a period marked by important administrative integration of the School, Doctor Cannon resigned the duties of deanship, September 30, 1958. The Reverend Professor Robert Earl

Cushman was elected Dean and assumed the responsibilities of the office on October 1, 1958.

The Role of the Divinity School

The Divinity School represents theological inquiry and learning within the greater University. By history and indenture, it stands squarely within the Christian tradition and recognizes its distinctive lineage in, as well as a continuing obligation toward, the United Methodist Church. It has been from its inception ecumenical in aspiration, teaching, and practice. Ecumenical also is the actual membership of its faculty. Educational policy has consistently aspired to nurture a Christian understanding "truly catholic, truly evangelical, and truly reformed."

The presiding purpose of the Divinity School is education for ministry. Ministry in Christ's name to the world increasingly assumes manifold forms. Provision for these variations of ministry is expressly supplied in the curricular resources of the School. However, while the conventional and inherited styles of ministry are now certainly undergoing change, the Divinity School Curriculum continues to prepare students for informed and discriminating discharge of the historic offices of church and congregation through the ministry of Word and Sacrament, pastoral care, and the teaching office. Whatever form or context "the local church" of tomorrow may assume, Divinity School education remains predicated upon the historically grounded probability that these offices will remain.

Under the guidance of this perspective, the Divinity School aspires to prepare adequately qualified students for mature espousal of their vocation, with disciplined intelligence informed by sound learning, and equipped for worthy professional service. This is regarded as a service to the Church, to the world, and, pre-eminently, to the Lord of the Church.

Change in Basic Degree Nomenclature

By action of the General Faculty and the Board of Trustees of Duke University, the basic theological degree offered by the Divinity School was changed effective June 1968. All students who fulfill the requirements for the basic degree and graduate at the June 1968 Commencement, will receive a Master of Divinity degree. This nomenclature will replace that of the Bachelor of Divinity, the degree hitherto granted to students who fulfilled their requirements for the basic theological degree. A new curriculum for the Master of Divinity degree was instituted for the first time in the fall semester of the academic year 1967-68.

The Relation of the Divinity School to Duke University

The Divinity School is an integral part of the University and shares fully in its activities, privileges, and responsibilities. The Sunday services in the University Chapel give Divinity School students an opportunity to hear each year a number of leading ministers of the country. The University Libraries make easily accessible a rich collection of 1,900,000 volumes. Selected courses in the Graduate School of Arts and Sciences and in the professional schools are open to Divinity School students without payment of additional fees. The general cultural and recreational resources of the University are available to them on the same basis as to other students.



Courses of Study and Requirements for Degrees

Degree Programs Offered by the Divinity School

The academic work of the Divinity School embraces three degree programs. These are the basic degree program ordinarily of three academic years, leading to the Master of Divinity degree (M.Div.); a one-year program beyond the basic degree, the Master of Theology (Th.M.); and a third program of two academic years leading to the degree of Master of Religious Education (M.R.E.). All are graduate-professional degrees. Admission to candidacy for the Master of Divinity and Master of Religious Education degrees presupposes the completion of the A.B. or its equivalent.

Students preparing for ordination to the Christian ministry, and requiring appropriate graduate-professional education, will regularly enroll for the Master of Divinity degree. Students whose acquired academic standing, under this basic degree program, entitles them to further specialized study may advance their command of selected theological disciplines by applying for an additional year of studies leading to the Master of Theology degree. Together, these two degree programs constitute a sequence. Although the Master of Divinity degree fulfills requirements for ordination by prevailing ecclesiastical standards, the

Th.M. program may assist in assuring a larger measure of professional preparation. Application for admission to the Th.M. program is open to graduates of other schools who have completed the basic theological degree.

The Master of Religious Education program is designed to prepare qualified persons, ordinarily not seeking ordination, for a ministry of Christian education in local churches or other contexts. The course of study is arranged to provide grounding in Biblical, historical, and theological disciplines as essential background for instruction in and exercise of professional competence in curricular planning, teaching methods, and supervision of educational programs for various age groups.

The specific requirements for each of these degrees are found in the succeeding pages. It is evident that completed course work cannot be credited toward more than one degree. Reciprocal transfer of credit for course work taken under either the M.Div. or the M.R.E. program requires the permission of the Dean.

Doctoral Studies Accredited by the Graduate School of Arts and Sciences

The Divinity School provides a substantial body of course offerings at an advanced level in Biblical, historical, and systematic and contemporary theological disciplines that are accredited alike by the Graduate School of Arts and Sciences and the Faculty of the Divinity School, and lead to the Doctor of Philosophy degree. Sharing responsibility with the University Department of Religion for staffing and curricular provision of this course of study, the Divinity School is the principal contributor to the Program of Graduate Studies in Religion. Since, however, the Ph.D. in Religion is certified and awarded under the Graduate School of Arts and Sciences, the doctoral student's admission and matriculation are administered under that division of Duke University.

With few exceptions, most courses in the Divinity School catalogue carrying a "200" number or above and belonging to the fields noted above, are applicable to doctoral programs of study.

Candidacy for the doctoral degree in Religion ordinarily presupposes the holding of the basic theological degree, the B.D. or equivalent. Qualified persons who desire to pursue studies leading to the degrees of M.A. or Ph.D. in Religion, under the administration of the Graduate School of Arts and Sciences, are advised to apply to the Dean of that School. Inquiries concerning fellowships or specific requirements of the Program of Graduate Studies in Religion may be addressed to Professor Waldo Beach, Director, 209 Divinity School.

The Basic Theological Degree—Master of Divinity

A revised course of study leading to the basic theological degree was instituted in the fall of 1967. The Master of Divinity degree is offered under three related but distinguishable curricular arrangements: a *Regular Program* (Program I), an *Honors Program* (Program II), and an *Independent Studies Program* (Program III).

Designed to advance the level of graduate-professional education and to enlarge student initiative, the three programs take account of differing levels of aptitude or of previous academic achievement as well as varying vocational aims or emphases on the part of individual students. The threefold form of the basic degree is, therefore, conceived as a series of stages open in principle to any student who, by exercise of initiative, evident enlarging maturity and achievement, may properly move toward increasing self-direction in graduate-professional studies. A student, for example, may enter as candidate in the *Regular Program*, advance to candidacy in the *Honors Program*, and, perhaps in very exceptional instances, complete his candidacy in the program of *Independent Studies*. He may, however, qualify for the *Honors Program* in his initial, or Junior year by virtue of the level of his undergraduate achievement and on formal approval of the Faculty Committee on Honors, Independent Studies, and Area Concentration.

The Regular Program (Program I)

The threefold curricular pattern, leading to the Master of Divinity degree, presupposes the basic structure of the Regular Program. Accordingly, both the Honors and Independent Studies programs are variants upon it. All three programs, likewise, utilize the provision for Advanced Standing. This permits entering students—qualified by previous undergraduate studies and with a prescribed level of achievement—to begin work in basic disciplines at a higher level than that of the required curriculum by substituting an advanced, but cognate course, for a core course requirement (See Advanced Standing in Admissions section).

To encourage student initiative and maturity and to stimulate studies in depth rather than pluralization of content, the Regular Program prescribes seventy-eight (78) semester hours credit as the requirement for graduation. Six semesters of residential study leading to the basic degree are required. The regularly anticipated academic load, therefore, will be four 3-semester-hour courses in four of the semesters, and five 3-semester-hour courses in two other semesters. Ordinarily, the five-course load will occupy the Fall and Spring semesters of the Middler

year. The delimitation of required hours for graduation entitles both student and instructor to expectations of substantial student investment and accomplishment.

The general features, components, and requirements of the Regular Program together with its proposed schedule are listed below.

General Features of Program I

A total requirement of 78 semester hours for graduation.

A normal academic load of four courses of 3 semester hours in four semesters, and five courses of 3 semester hours in two semesters.

Junior Seminars and Colloquia in the Fall and Spring semesters of the first year.

In Biblical studies: alternative programs for students of Biblical languages (see Language Study, p. 17); English Bible examination necessary for graduation and preparatory studies, without credit.

Special allowances: up to 3 semester hours of credit for Field Education projects under faculty supervision; up to 6 semester hours credit for Independent Study; up to 6 semester hours Clinical or Internship credit; up to 6 semester hours of cognate studies in the Graduate School of Duke University with the permission of the student's adviser and the Dean.

Area Concentration in the Senior year, including 9 semester hours of advanced courses in one area (division or subdivision) of the curriculum.

An Area Examination at the end of the Senior year, with 3 semester hours credit for a reading course or seminar in preparation for the examination.

Synopsis of the Regular Program

Four courses in *Biblical Studies* (Old Testament, New Testament):

Introduction to the Old Testament (O.T. 11)
Early Christian Life and Literature (N.T. 18)
Elective course in Old Testament Interpretation
Elective course in New Testament Interpretation

Four courses in *Historical Studies* (Church History, Historical Theology, American Christianity):

History of the Church to the Protestant Reformation (Ch. 13)
Either Church History 14 or Historical Theology 21
A course in American Christianity (ordinarily A.C. 28)
An elective course (below the 300 level) chosen from the fields of Church History, Historical Theology or American Christianity

Four courses in *Theological Studies* (Christian Theology, Christian Ethics, Christianity and Culture):

Either Types of Religious Philosophy (C.T. 20) or Contemporary Western Culture (C.C. 16)
Introduction to Christian Theology (C.T. 32)
A course in Christian Ethics (ordinarily Ch.E. 27)
An elective course (below the 300 level) chosen from the fields of Christian Theology, Christian Ethics, or Christianity and Culture

Four courses in *Ministry Studies* (The Care of the Parish, Christian Education, The Church at Worship, Pastoral Psychology):

Junior Seminar: The Church and Ministry Today
Three elective courses, one from each of three of the following fields: The Care of the Parish, Christian Education, The Church at Worship (Preaching *or* Worship and Church Music), Pastoral Psychology

One course in *World Christianity* (Missions, Ecumenics, Roman Catholicism)

The Junior Colloquia

Eight or more additional *elective* courses (to constitute a total of 78 hours), including 3 advanced courses as an Area Concentration, and a seminar reading course in preparation for the final Area Examination.

Normal Distribution of Courses

Courses as scheduled below are of three kinds: *core courses, limited electives,* and *elective courses.* Core courses represent foundational studies deemed essential for advancement in the curriculum toward theological understanding and professional fulfillment. Core courses approximate to uniform requirements; however, since the provisions for Advanced Standing and Language Study apply to them primarily, their invariability is to that extent modified.

Limited elective courses both afford and require on the part of the student opportunity for wise choice from among the components of the prescribed curriculum that are not individually specified but fall within the four main divisional groupings of studies.

Elective courses are more nearly free options which are, at the same time, electives governed by the student's prior determination of his academic and professional preferences. These are: (1) the Area Concentration and Examination for the Senior year, and (2) the prevailing vocational or controlling professional aim which his studies properly must serve. The student's organization of program, in consultation with his assigned faculty adviser, must have been largely completed and approved by the time of registration for the Spring semester of the Middler year.

General Academic Program

Master Schedule

Junior Year

Fall Semester	*Spring Semester*
Biblical: O.T. 11	Biblical: N.T. 18
Historical: C.H. 13	Historical: C.H. 14 or H.T. 21
Theological: C.T. 20 or C.C. 16	Theological: C.T. 32
Junior Seminar 9	Junior Seminar 10
Colloquium I	Colloquium II

Middler Year

Biblical: O.T. or N.T. Interpretation	Biblical: N.T. or O.T. Interpretation
Historical: ordinarily A.C. 28	Historical: limited elective
Theological: ordinarily Ch.E. 27	Theological: limited elective
Ministry: limited elective	Ministry: limited elective
Elective	Elective

Senior Year

World Christianity: limited elective	Elective
Ministry: limited elective	Elective
Elective	Elective
Elective	Elective (reading course or seminar for Area Examination)

The General Academic Program constitutes a specific prospectus and proposed ordering of studies regularly applicable to Program I. It also serves as a model or paradigm for both Programs II and III. While these latter programs may vary from it, they nevertheless are answerable to it and to the general requirements and academic objectives it comprehends.

The Honors Program (Program II)

The Honors Program leading to the Master of Divinity degree is open to students admitted to regular course of study who, in virtue of superior undergraduate record and achievement, give promise of capacity for more rapid advancement toward independent utilization of the resources of curriculum, library, and faculty supervision.

Admission Procedures

A student applying for admission to the Divinity School through the office of the Registrar may apply at the same time for admission to the

Honors Program. Procedures and requirements are as follows: (1) The student must submit a "B" or better undergraduate record. (2) His application will be reviewed by the Faculty Committee on Honors and Independent Studies. This committee may require of the student an interview, if necessary, at the time of Fall matriculation. (3) He must submit with the application his scores on the Graduate Record Examination or other comparable test scores as the committee may request.

Notice of the action of the committee will not necessarily be coincident with notice of admission to the Divinity School, since two different committee actions are involved and because of the special procedures involving Honors applicants noted above. However, with submission of all required credentials, and barring the need of an interview, of which the student would be formally notified, the Honors Program Committee will give notice of action not later than April 15 for applicants who have submitted all credentials prior to March 15. Late applications will be acted upon as promptly as possible.

Admission to the Honors Program at the end of the Junior year is provided for and will be contingent upon superior performance in course work (ordinarily at least a "B" average) and the approval by the Honors Program Committee. Applicants completing their course work of the Junior year will apply to the Honors Program Committee, through the office of the Registrar, not later than July 1 preceding their Middler year.

General Features of the Honors Program

Program II shares many of the features of the Regular Program including Advanced Standing and is subject to the same general regulations. Under Program II, however, seventy-two (72) semester hours credit are required for graduation. Program II includes provisions for a "reading out" of some courses and for a greater measure of independent study. The general structure of Program II depends upon the Master Schedule of the General Academic Program (See p. 9) with the variations afforded by the following particular requirements and provisions of Program II.

Synopsis of the Honors Program

Junior Year. The Junior Honors student's program will follow the Regular Program with the following exceptions: (a) The student may "read out" two courses, ordinarily one per semester. (Not applicable to C.T. 32). (b) He may take two advanced courses in the same areas as the specified introductory courses if he is qualified to do so.

Third Semester. (a) The student may choose an advanced course in any of the four areas specified in the Regular Program (Biblical, A.C., Ch.E., Ministry). (b) He may "read out" in any two of the four areas

where that is practicable or permissible. ("Reading out" is generally possible only in introductory courses, not in advanced courses.)

Fourth Semester, Fifth Semester. 9 hours of advanced courses without regard to area distribution, 3 hours of individual study each semester.

Sixth Semester. 6 hours of advanced courses, 6 hours for individual study leading to thesis, or 6 hours for clinical training or internship.

Administration of the Program

The Honors student will be assigned to a faculty Adviser with whom consultation will be imperative. His program of studies is subject to review by the Honors Program Committee at the end of each semester to determine his eligibility for continuance in Program II. His prospective course of study for each succeeding semester requires the approval of both his faculty Adviser and the Chairman of the Honors Program Committee. All programs of study are subject to the review of the Dean and the Committee on Academic Standing.

Students of the Honors Program may in any semester ordinarily register for and receive no more than 12 s.h. credit toward graduation. They may, however, audit or, without requesting credit, register for additional courses. Ordinarily an Honors student is limited to 15 s.h. of course work each semester, including any courses taken in addition to the 12 s.h. described above. Exceptions require approval of the Dean and of the director of the Honors Program. Grades for courses taken without credit become a part of the student's permanent record but do not count toward requirements for graduation.

The Independent Studies Program (Program III)

The Independent Studies Program leading to the Master of Divinity degree is open to a limited number of students of superior ability, strong personal motivation, and somewhat formal goals of scholarship in Divinity. The program allows for a maximum degree of self-direction combined with seasoned counsel and responsible evaluation of progress toward the candidate's stated goals.

Admission Procedures

At any time after notice of admission to the Divinity School but ordinarly not less than 60 days prior to matriculation, a student may submit to the Registrar notice of his desire to apply for the Independent Studies Program. He will submit a 5000-word essay on the purposes which he entertains and the kind of program he believes the Divinity School resources permit him to undertake, and will show how this pro-

gram can contribute to the development he envisions for himself. This shall be at once a device for evaluating his maturity and readiness for such independent studies and a preliminary (though not prejudicial) guide to the formulation of his program of study. At the time of matriculation he will be interviewed by a panel of three faculty members appointed to examine him comprehensively over his baccalaureate studies and his intended program.

Consideration will be given to applications for later admission to Program III from students whose unusual achievement in their first year in Programs I or II demonstrates their ability to undertake the Independent Studies Program.

Program of Study and its Administration

The student in Program III will plan and pursue his program of study with the guidance of a faculty committee of three appointed by the Dean. The chairman of this committee shall be the candidate's Tutor.

1. The guidance committee shall meet with the candidate early in his first semester to determine three major divisions of study in which he shall be subject to qualifying examinations at the beginning of his fifth semester of study. They shall determine the nature (written, oral, practical, or other) of these qualifying examinations, and with help from the relevant faculty, shall indicate the typical scope of materials and basic bibliography of the fields in which he is to be examined, or the practical skills to be acquired.

2. The Tutor, with such assistance from the guidance committee and other faculty as he requires, shall advise, counsel, and direct the candidate, and shall assign short papers which may serve as periodic progress reports to the Tutor and to the candidate himself. Such papers shall be read by the Tutor and, when he deems it advisable, by other members of the committee. The candidate should be in consultation with his Tutor not less than once every two weeks (including the occasions required by his papers).

3. The candidate may attend any classes, lectures, and other formal occasions of instruction, observing amenities of consideration for the instructor and for students enrolled for credit. Normally this would require the permission of the instructor.

4. The candidate shall be subject to a series of examinations:

(a) He shall be examined in appropriate ways at the end of his second semester to determine his progress. This examination should be informal and in no sense exhaustive, seeking rather to determine whether the candidate is making satisfactory progress and fulfilling his promise as anticipated.

(b) He shall be examined, by the end of his fourth semester if

possible, to determine his working competence in Hebrew and in either Greek or Latin.

(c) At the beginning of his fifth semester, he shall undergo qualifying examinations in ways appropriate to his program of study (as indicated above, and as anticipated from an early meeting with his guidance committee).

5. Upon satisfactory completion of his qualifying examinations, and with the approval of his committee and careful guidance of his Tutor, the candidate shall undertake a project of intensive inquiry to consolidate his whole program in light of vocational or professional goals. This project shall eventuate in a thesis or, in the case of projects such as internship or clinical programs or other practical investigations, the written equivalent of a thesis. Satisfactory completion of the thesis or its equivalent, including oral examination by the guidance committee, shall fulfill requirements for graduation.

Transcripts and Grades

When it becomes necessary to supply a transcript of grades for a student in the Independent Studies Program, he will be credited with hours in the divisional fields corresponding to his focus of independent studies. Grades shall be recorded as "A" when he has, in the judgment of the Tutor, performed with distinction or, otherwise, as "B". If at any time a student falls below an acceptable level of performance in the Independent Studies Program he will be advised to return to study of the regular curriculum. In such case he will have placed upon his record credit for the number of hours which he would normally have acquired at this chronological point in his career had he pursued the normal course of study. Hours will be assigned to divisional areas which correspond to the areas of his independent study. Grades for these hours will be determined by his Tutor.

Administration of the Curriculum

General Regulations

1. Full-time students are advised to enroll for core and limited elective courses as specified for the respective semesters of the general academic program.

2. Students in programs leading to either the Master of Divinity or Master of Religious Education degree are required at the time of each registration period to plan their course of study with consultation and approval of their assigned faculty advisers.

3. The schedules or academic programs of all students in candidacy for Divinity School degrees are subject to the review and approval of the Dean and the Committee on Academic Standing.

4. Student Pastors in candidacy for the Master of Divinity degree under any of the three programs of study are advised that their program will normally require a fourth academic year. Modification of this schedule of expectancy will be treated with reserve and will require the express approval of the Dean on recommendation of the Dean of Students and the Associate Director of Field Education.

(a) Students with pastoral charges, or comparable extra-curricular responsibilities, will normally enroll for not less than seven (7) nor more than ten (10) semester hours.

(b) An entering student desiring to serve as a student pastor must have the approval of the Director of Field Education and must participate in an Orientation and Training Program (see "Field Education," page 52).

(c) Students who accept pastoral charges in their Middler or Senior years are required to have the prior approval of the Dean of Students on recommendation of the Associate Director of Field Education. Such students will be required to restrict their course work in accordance with the regulation stated above (4a) governing the course load of all student pastors-in-charge.

(d) Modifications of these regulations, in the case of individual student pastors, will be scrupulously administered in terms of location of charge and commuting distance, magnitude of assignment, and residence during the academic week. Demonstrated academic achievement will regularly condition any modification of the normal limitation. Since adequate indication of the student's academic proficiency will not be available before the completion of the first academic year, no modification of regulation 4(a) for junior students is allowed.

5. Student Assistant Pastors (not pastors-in-charge) may enroll for a full academic load providing: they are not on probation, are under the supervision of the Associate Director of Field Education, and possess field duties involving no more than 15 hours per week.

6. A student in candidacy for the Master of Divinity or Master of Religious Education degree shall enroll for no less than seven (7) semester hours in any semester. Variations from this regulation shall be by approval of the Dean on recommendation of the Dean of Students.

7. Not over 26 semester hours of Summer School work may be credited toward the degree of Master of Divinity for students in Program I, and not over 24 semester hours for students in Programs II and III. Students are strongly encouraged to pursue their studies in regular term.

8. Study abroad, with transferable credit toward graduation, may be

allowed to a candidate for the Master of Divinity degree by approval of the Dean on recommendation of the Dean of Students. Permission will not be granted in the absence of a strong academic record. Ordinarily, permission for such study may be granted to students who have completed the work of the Middler year. Both the institution abroad and a specific course of study proposed must have the prior approval of the Registrar, the Chairman of the Registration Committee, and the Dean.

9. Transfer of credit to the Divinity School of Duke University, leading to candidacy for the degree of Master of Divinity, ordinarily may not exceed in amount more than one-half of the academic credits (in proportional evaluation) required for fulfillment of degree candidacy (see "Admission," page 36).

10. Special Student status may be granted on recommendation of the Director of Admissions and the Registrar by approval of the Dean. Particular circumstances must prevail in the case of such admissions and will not be honored to permit circumvention of requirements of regular academic programs. Special students are not eligible for tuition or other scholarship grants.

11. Entering students matriculating at the beginning of the Spring semester will, with the approval of their faculty adviser, substitute for the *Junior Seminar* of the previous semester an elective cognate course at a convenient point in their program.

12. Auditing of courses is permitted on notice to the Registrar and by permission of the Dean and the faculty instructor concerned. Auditors, not in regular course of study as candidates for degrees, are subject to a $25.00 fee by University regulations.

13. Students in candidacy for a degree who secure minor employment outside the channels of the Field Education Office are required to inform the Associate Director of Field Education. Students carrying an outside employment work load of more than 15 hours weekly may be required to limit their academic load.

14. Students in candidacy for the Master of Divinity degree are required to sit for both the O.T. and N.T. English Bible examinations not later than their Middler year. It is requested that Master of Religious Education candidates sit for the examinations during their first academic year.

Curricular Provisions and Procedures

Admission to candidacy for the Master of Divinity degree is admission to the Regular Program I. Admission to candidacy under Programs II and III is through application to the Faculty Committee on Honors and Independent Studies through the office of the Registrar (See Admission Procedures, p. 11). Students in all programs are assigned to a faculty adviser for guidance and approval of their course of study.

Area Concentration

Area Concentration is applicable to Program I. It may be formulated in consultation with the student's faculty adviser as soon as feasible; it must be formulated no later than the Spring semester of the Middler year. Modifications of the program may be desirable in course but will be difficult after registration for the first semester of the Senior year. Area Concentration includes nine (9) semester hours of advanced study in either a division or subdivision of the stated *Courses of Instruction* and, in addition, a reading course or seminar preparatory to the Area Examination, creditable for three (3) semester hours on passing the Area Examination. A faculty committee will arrange and supervise divisional preparatory area studies and prepare the Area Examination to be taken in the final semester of the Senior year.

Vocational Emphasis and Professional Aims

The curriculum of the Divinity School serves graduate-professional aims with maximum flexibility. This lays heavy responsibility upon the student to see that he avails himself of those disciplines in both formal and ministerial studies that serve his vocational and professional ends. In planning his course of study, therefore, he must in consultation with his adviser, shape his program through reliable understanding of his eventual professional service. The following types of ministry represented in the former Divinity School curriculum may serve to indicate the variety of contemporary ministries: Parish Ministry, Ministry of Christian Education, Ministry of Missions, Pastoral Care, Teaching, Campus and Urban Ministries, Chaplaincy—Armed Forces or institutional. Attention to the course requirements listed for "Vocational Groups" under the former curriculum is recommended as a useful guide both for students and faculty advisers.

Ordination and Disciplinary Requirements

Students preparing for ordination are strongly advised to fulfill denominational requirements for study of church polity. Methodist students must attend to regulations of the *Discipline*, paragraph 344. Courses in Methodist church history and polity do not satisfy limited elective requirements. Introduction to Christian Theology (C.T. 32) has been certified for the Disciplinary requirement in Methodist doctrine.

Administration of Advanced Standing

The rationale of Advanced Standing is provided in the section entitled "Admissions" (See page 37). The provision is in principle applicable exclusively to core courses under the new curriculum. However, students

infrequently qualify for advanced standing in Early and Medieval Church History, and the principle is not applicable to the introductory course in Christian Theology (C.T. 32). Students qualifying for advanced standing in Types of Religious Philosophy (C.T. 20) by virtue of strong undergraduate background in philosophy and religion, are assigned to Contemporary Western Culture (C.C. 16). Students offered advanced standing prior to matriculation may with consultation and approval of their faculty adviser decline such standing.

A convenient summary of advanced standing options is as follows:

For Old Testament 11: O.T. 12; 101; 106 A, B, C, D; 196; 210-202.
For New Testament 18: N.T. 103-104; 105; 107; 109; 116 A, B, C; 117 A, B; 118; 119.
For Types of Religious Philosophy: C.C. 16.
For Church History 13: C.H. 137; 138; 331; 332.
For Church History 14: C.H. 85; 250; 330.

Language Study

Students who receive credit for six hours of New Testament Greek thereby fulfill the N.T. limited elective requirement in exegesis or interpretation. A similar provision is made for six hours of credit in Hebrew, which fulfills the O.T. limited elective requirement in exegesis or interpretation.

Students entering the Divinity School with undergraduate preparation in Greek may find it advantageous to select their New Testament limited elective in second year New Testament Greek or from among courses using Greek.

Student pastors or others carrying less than a full academic load and who desire to begin the study of Greek in the junior year may postpone the core course in Old or New Testament.

Graduation Credits

It is the responsibility of each student to see that he meets all requirements for graduation, and to take his courses in proper sequence. He is also responsible for seeing that any special permission granted him to deviate from the normal program is properly recorded in his personal files. Deviations from a normal academic program must be approved by the Dean on recommendation of the Dean of Students.

Grading System

The grading system of the Divinity School employs the letters A, B, C, D, and F, which have been defined as follows: A, Excellent; B, Superior; C, Average; D, Inferior; F, Failure; WP, Withdrew Passing; WF, Withdrew Failing; WI, Withdrew Illness; W, Withdrew, discretion of the

Dean; I, Incomplete; P, Passed; N.C., Non-credit. (See section on Incompletes.) No percentage equivalents are stated. A student is expected to maintain an average of "C."

In all courses where the instructor considers attendance a necessary part of the work of the course, a student may not receive a grade of over "C" if his absences total 12 per cent of the regular class periods, and if the absences total 24 per cent of the class periods he may not receive credit for the course.

Incompletes

A student may, with the permission of the instructor concerned, petition the Dean of Students to receive a grade of "incomplete" in a course. Such permission may be granted when a student, through some circumstance beyond his control, such as illness, has been hindered from meeting the course requirements. No "incomplete" is recorded without permission in writing from the Dean of Students. Ordinarily, an "incomplete" will not be approved in the case of students completing their academic work in the fall semester. An "Incomplete" automatically becomes an "F" unless it is removed through completion of assigned work by the following dates:

for "Incompletes" incurred in fall semester courses, March 15, following;
for "Incompletes" incurred in spring semester courses, October 15, following; and
for "Incompletes" incurred in summer courses, October 15, following.

Change of Course or Withdrawal

A student is permitted to change his registration for course work without incurring a penalty no later than completion of the second meeting of the course from which he desires to withdraw or, correspondingly, of the course to which he seeks admission.

No student shall be permitted to drop a course after the expiration of one-third of the period of instruction of the course without incurring failure, except for causes adjudged by the Dean of Students to be beyond the student's control. Conditions of emergency and not considerations of convenience shall be regarded as determinative in considering requests.

Graduation with Distinction

Students who achieve a grade point average of 3.75 (A, 4; B, 3; C, 2; and D, 1) for over-all academic record in the Divinity School are granted the degree of Master of Divinity, *summa cum laude*. Students with a grade point average of 3.5 are awarded the degree, *magna cum laude*. Such distinction is specified on their diplomas.

The Master of Religious Education Degree

The course of study leading to this degree is designed for persons desiring to prepare for leadership and service in the educational ministry of the church.

Admission

Applications for admission to the Master of Religious Education program are evaluated by the same standards as those applicable to the Master of Divinity degree and admission requirements and procedures are also the same. Attention is directed to the policy statements in this official *Divinity School Bulletin* published annually. Students planning to specialize in Christian Education should study carefully the section of the *Bulletin* which lists the most appropriate prerequisite studies for theological education. It is suggested that significant preparation in the areas of psychology, education, and sociology should be included in the choice of undergraduate studies. Studies in Religion are also recommended, especially for persons wishing to qualify for admission to advanced courses in the Divinity School curriculum.

General Requirements

Fifty-two semester hours of graduate-professional work, including a senior thesis or major project, must be completed for graduation. A student whose course load averages 13 semester hours each semester will qualify for graduation at the end of two academic years. The amount of work allowed in each semester may not exceed that permitted in the Master of Divinity curriculum.

In approving a plan of study leading to the degree, consideration will be given to undergraduate course work in Biblical studies and Christian Education provided such courses were taken in the junior and senior years in an accredited four-year college. A candidate having an academic average of "B" or better in undergraduate studies may be permitted to "read out" in a maximum of two courses (6 s.h.), usually scheduled one in each year, provided application for this privilege is approved by the Director of the M.R.E. program and the instructor(s) involved. A student not approved for "reading out" in the first year may qualify for this privilege in one course (3 s.h.) in the second year on the basis of a "B" or better average in the first year.

Candidates must pass the English Bible examinations as required in the Master of Divinity program.

A senior thesis or major project is required in the second year, with three semester hours being allowed for the necessary supervised research. Approval for the proposed thesis or project by the Director of the M.R.E.

program and the instructor(s) involved must be given no later than the end of the first year.

Course Requirements for the M.R.E. Degree

Curriculum Division		*Required Semester Hours*
Biblical Studies		6 to 9
Historical Studies		6 to 9
Theological Studies		6 to 9
Ministerial Studies		18
Church at Worship	3	
Pastoral Psychology	3	
Christian Education	12	
(including 3 s.h. for thesis or project)		
Total		36 to 45
Electives		16 to 7
Grand Total		52 52

The Master of Theology Degree

The course of study leading to the degree of Mastor of Theology is designed for graduates of accredited theological schools who desire to continue or resume their theological education for enhancement of professional competence in selected areas of study. Enrollment in the Th.M. degree program is open to a limited number of students who have received the B.D. (or the equivalent) with superior academic records.

Admission inquiries may be addressed to the Registrar for referral to the Director of the Th.M. program.

General Requirements

The general requirements for the degree of Master of Theology are:

1. Twenty-four semester hours of advanced studies, with an average grade of "B" (3.00 average on a 4.00 scale).
2. Superior performance in a comprehensive examination covering the major area of study. As an alternative to the Comprehensive Examination the student may elect to do a research project in his major area. This project shall carry 3 s.h. credit.
3. Residence for one academic year.

There are no general language requirements, but classical or modern languages may be required for certain programs (for example, Hebrew or Greek in Biblical studies).

The Program of Study

At least twelve of the required twenty-four hours must be taken in one of the basic divisions of study (Biblical, Historical, Theological, or Professional) which shall be designated as the candidate's major, and at least six hours in another of the divisions which shall be designated as the candidate's minor. No more than twelve hours may be taken in the summer sessions. No more than six semester hours of work completed in another accredited institution may be transferred and credited toward the degree. Ordinarily, no more than six hours may be taken through directed reading, and no more than three in any one semester or summer term. In the area of Pastoral Psychology, up to twelve hours may be taken through clinical training.

The comprehensive examination will be given at the close of the course of study for the degree, ordinarily in May or September.

The entire program of studies and comprehensive examination should be completed within twelve months. In exceptional cases, the time limit may be extended, but in no case beyond three years.

The candidate majoring in Pastoral Psychology chooses between a program which emphasizes Clinical Pastoral Education in the institutional setting and one which emphasizes Pastoral Care and Counseling under supervision in the parish setting. In either case, Course PP 277A (or its equivalent) is considered a prerequisite for a major in Pastoral Psychology. (The four semester hours credit are not applicable toward the twenty-four hours required for the degree, although the course will be indicated on the student's transcript). Accordingly, the student majoring in this area should ordinarily make provision for a program extending for a full calendar year, beginning the first full week in June.

Financial Aid

Candidates for the Th.M. degree are eligible for financial aid on the same basis as all regularly enrolled Divinity School students.

Please note in the pertinent sections of the chapter on "Financial Information" that the charges for tuition and general fee for the Th.M. degree are combined and are made on the basis of the number of semester hours taken, and that in order to be eligible for medical and surgical care a student must be taking at least seven hours.

Programs of Continuing Education

Divinity School Seminars

The Divinity School, with the support of the James A. Gray Fund, conducts each year a series of extension seminars consisting of two-day courses for Divinity School alumni and other ministers. In the fall semester of 1967 four seminars were held as follows: Richmond, Virginia, in Ginter Park Methodist Church and Columbia, South Carolina, in Shandon Methodist Church (November 27-28, 1967); Hickory, North Carolina, in First Methodist Church and Kinston, North Carolina, in Queen Street Methodist Church (November 30-December 1, 1967). The subject presented in all four seminars was "The Gospel and Ethics."

Lecturers in the Richmond and Kinston seminars were Dr. Kenneth W. Clark, Professor Emeritus of New Testament, Duke Divinity School; Dr. Paul Hessert, Professor of Theology, Garrett Theological Seminary; and The Reverend S. Collins Kilburn, Minister, The United Church, Raleigh.

Lecturers in the Columbia and Hickory seminars were Dr. D. Moody Smith, Jr., Associate Professor of New Testament, Duke Divinity School; Dr. Theodore Runyon, Professor of Systematic Theology, Candler School of Theology; and Dr. Joseph L. Allen, Associate Professor of Ethics, Perkins School of Theology.

The Duke Divinity School Seminars were directed by Dr. McMurry S. Richey, Professor of Theology and Christian Nurture, who presided for the Columbia and Kinston Seminars, while Dean Robert E. Cushman presided for the Richmond and Hickory Seminars.

The Henry Harrison Jordan Loan Library

Henry Harrison Jordan, distinguished member of the Western North Carolina Conference (1862-1931) was memorialized by his children in the establishment of an endowment in 1947. The Divinity School librarian is the custodian of books purchased under this fund for loan, through postal services, to qualified ministers of all denominations or localities. The Jordan Loan Library undertakes to maintain a catalogue of up-to-date publications representative of the several theological disciplines and areas of the minister's professional interest. Books are loaned on application to the librarian of the Divinity School from a printed catalogue supplied on request.

Divinity School Summer Clinics

Six clinics, running concurrently, for ministers of all denominations will be conducted at The Duke Divinity School, July 29-August 9. These are designed to supplement Seminary education through two weeks of intensive training in one selected subject. No academic credit is given. Participants are expected to attend the full two weeks from the opening dinner to the closing luncheon.

American Christianity. The group will consider distinctive problems and characteristics of contemporary Christianity in America. Lectures, discussions, laboratory trips. Special focus on correlation of religion and the arts. *Dr. Stuart C. Henry*

Campus Ministry. This clinic will deal with current trends in theological disciplines that relate to the nature of the university and the contemporary role and function of campus ministers and ministers of near-campus churches. *The Reverend Donald J. Welch and The Rev. Robert A. Davis*

Church Planning and Development. Leadership Development in the church of small membership will be the theme for consideration of the principles of recruitment and training leaders, giving particular attention to the areas of evangelism, stewardship, education, outreach and worship. Professionals in each field will be used as resource persons. *Dr. Daniel M. Schores, Jr.*

New Testament. An inquiry will be made into the question of whether

and how the New Testament message may be relevant to the present day world. Lectures, reading, and discussion. *Dr. D. Moody Smith, Jr.*

Pastoral Care. The personal and professional issues involved in the ministry of pastoral care will be explored through lectures, group discussions, and hospital visitation. *Dr. Richard A. Goodling and Dr. Donald S. Williamson*

Preaching. The clinic will focus on principal and practical aspects of sermon planning, preparation, and presentation, particularly in the area of sermon construction and delivery. Opportunity is provided for each participant to preach at least twice before a small group for critique. *Dr. John W. Carlton*

Cost. Registration Fee $10.00 Tuition $50.00
Room, double per week $8.75—Room, single per week $11.00
Linen, upon request, $3.75 per week.
Meals, Cafeteria

Sponsoring institutions make available funds for tuition. Other scholarships available upon request.

For full information: Write to The Director and Registrar, Dr. M. Wilson Nesbitt, Box 4814, Duke Station, Durham, North Carolina 27706.

The School for Supply Pastors

In cooperation with the Department of Ministerial Education of the Board of Education and the Southeastern Jurisdictional Conference of The Methodist Church, Professor O. Kelly Ingram directs for the Divinity School a School for Supply Pastors of The Methodist Church and others taking the Methodist Course of study for ministers in the summer of 1967. This school is in session for approximately four weeks each summer, and the required studies for one full year can be completed in this period. This is not a part of the regular work of the Divinity School and no credit toward a seminary degree can be earned. The faculty includes representatives from the Divinity School and other church-related institutions, plus selected leaders of nearby Annual Conferences. The twentieth session of the Supply Pastor's School is scheduled for July 8-August 2, 1968.

Consultation on The Task of Theology Today

On April 4-6, 1968, a significant consultation of theologians was held on the Duke campus to deal with "The Theology of Hope and the New Tasks of Theology Today." Professor Jürgen Moltmann, distinguished visiting professor of theology at Duke from the University of Tübingen

and author of "Theology of Hope" presented the position paper. Other participants included Professors Frederick Herzog and Roland Murphy from Duke; Professors John MacQuarrie and Roger Shinn from Union Theological Seminary in New York; Professor James Robinson, Claremont Graduate School; Professor Van A. Harvey, Southern Methodist University; Professor Harvey Cox, Harvard University; Professor Langdon Gilkey, University of Chicago; and Professor James M. Gustafson, Yale University Divinity School. Professor Emeritus H. Shelton Smith of Duke and Professor Paul L. Lehmann of Union Theological Seminary, New York, served as chairmen of the consultation.

Other Programs

Facilities for Advanced Study in the American Schools of Oriental Research

The Divinity School of Duke University is one of the supporting members of the American Schools of Oriental Research. Accordingly, students in the Divinity School have the privilege of attending the American School in Jerusalem or the one in Bagdad without charge for tuition. They may also compete for the financial aids which are offered annually by these Schools, which consist of four fellowships, the stipends depending upon available funds.

Programs in Pastoral Psychology

Programs in Pastoral Psychology beyond the studies incorporated in the M.Div. curriculum are provided in cooperation with the Duke University Medical Center. Five such special programs are available:

1. The Master of Theology degree with a major in Pastoral Psychology is ordinarily a calendar year program beginning the first full week in June. However, upon the recommendation of the staff, candidates with a quarter or more of clinical training may begin their program in September. Majors choose between a program which emphasizes Clinical Pastoral Education in the institutional setting and one which emphasizes Pastoral Care and Counseling under supervision in the parish setting. In either case, a quarter of clinical training (PP 277A or its equivalent) is considered a prerequisite. Candidates who emphasize CPE in the institutional setting receive two quarters of clinical training credit through the Association for Clinical Pastoral Education if their program extends over the calendar year.
2. A summer quarter of CPE is available beginning the first full week

in June for qualified M.Div. candidates. Certification is through the Association for Clinical Pastoral Education.

3. A summer quarter of Parish Clinical Education is available to students enrolled in The Divinity School serving in churches under the Rural Church Program under the Duke Endowment.
4. A one-year certificate or non-degree internship program in CPE is available through the Duke Medical Center for those who hold the M.Div. or equivalent degree. These trainees may enroll in The Divinity School as Special Students for a course or two each semester. Such training provides two quarters CPE credit through the Association for Clinical Pastoral Education.
5. A two-week clinic in Pastoral Care is provided each summer as part of The Divinity School's continuing education program for men with the M.Div or equivalent degree.

For further information concerning any of these programs, write to Dr. Richard A. Goodling, Director, Programs in Pastoral Psychology, The Divinity School. See Master of Theology degree program, p. 20.



Resources for Study

Library Resources

Divinity School Library

The Divinity School Library, containing a collection of more than 135,000 volumes in the field of religion and closely related disciplines, affords an unusual wealth of material for the seminary student. Although it is an integral part of the University's nine-unit library system which possesses approximately 1,900,000 books, the Divinity School Library has its own separate facilities in the Divinity School building. Its book collection is operated on the open stack system, and its reading room provides study facilities for students, housing space for the special reference collection in religion, and for the current numbers of the more than 500 religious periodicals to which the Library subscribes.

Staffed by a librarian and a reference librarian who are trained in theology as well as in library administration, and by a circulation staff of two persons aided by a number of student assistants, the Divinity School Library offers a variety of reference services to assist the student in selecting and locating materials. The staff, in cooperation with the faculty, maintains a book and periodical collection to support both basic courses and advanced research in all major fields of religious studies.

The Divinity School Library is adjacent to the Perkins Library and is internally connected with it by a corridor which gives easy access to its

many departments. The seminary student is permitted to withdraw books from the collection of more than 1,100,000 volumes in the Perkins Library, and to make use of its other resources and facilities which include manuscripts, archives, public documents, newspapers, periodicals, microfilm, maps, rare materials (among which are forty-one prized ancient Greek manuscripts), reference assistance, and provision for the borrowing of books not in the Duke Libraries from the Library of the University of North Carolina and other institutions.

Ormond Memorial Fund

Established in 1924 by Dr. J. M. Ormond, '02, and Mrs. Ormond, in memory of his mother and father, Mr. and Mrs. J. J. Ormond, the income from the Ormond Memorial Fund is to be used for the purchase of a collection of books on the rural church for the Library of the Divinity School at Duke University.

Avera Bible Fund

Established in 1895 by gift of Mrs. L. B. McCullers in memory of her husband, Willis H. Avera, the fund provides for the purchase of books to be used for the Divinity School Library.

Louis W. Bailey Memorial Fund

This memorial fund was established in 1958 by the Reverend A. Purnell Bailey in memory of his father. The income is to be used for books for the Divinity School Library.

The William Arthur Kale, Jr. Memorial Fund

William Arthur Kale, Jr. was a member of the Duke University class of 1958, a lover of sacred art and music, and a member of the University Chapel Choir. In his memory, there was established in 1964, by the provision of his parents, Professor and Mrs. William Arthur Kale, Sr., a fund for the purchase of books and other materials in the area of fine arts and religious musicology for the perpetual enrichment of the holdings of the Divinity School Library.

Corporate Worship

One of the most important aspects of a program of training for Christian service is warm and discriminating common prayer.

The center of corporate life of the Divinity School has been its own

place of worship, York Chapel. Due to current construction for renovation of library facilities, Divinity School worship is conducted in the great Chapel of the University. Regular chapel services are held, at which all students are expected to be present. Services are led by members of the faculty, by visiting ministers, and by members of the student body. Each spring, the Worship Committee invites a Duke alumnus to return to the Divinity School for a week to share, through Chapel sermons and seminar discussions, his experience of the challenges and possibilities of the parish ministry.

Public Lectures

The Committee on Lectures and Public Events presented or sponsored the following lecturers during the year 1967-68: The Very Reverend the Lord MacLeod of Fuinary, founder of the Iona Community in Scotland; The Reverend Professor Theodore Runyon, The Candler School of Theology, Emory University; Dr. R. J. Goldman, Principal, Didsbury College of Education, Manchester, England; The Reverend Professor James T. Cleland (Faculty Lecturer); Father Paul Verghese, Syrian Orthodox Bishop, India; and the Reverend Jürgen Moltmann from the University of Tübingen, Visiting Professor at Duke Divinity School during the year 1967-68.

Lectures and Symposia

The James A. Gray Lectureship

The James A. Gray Lectures were established in 1950 as part of the fund set up in 1947 by Mr. James A. Gray of Winston-Salem, North Carolina. This lectureship was once again delivered in connection with the Ministers' Convocation, held at the University in the fall of 1967. The lecturer was the Reverend Dr. James K. Mathews, Bishop of the Boston Area, The Methodist Church. His subject was "Methodism and Ecumenism."

The Divinity School Library Lectureship

In 1948 the Duke Divinity School Library Lectureship was established by the Reverend George B. Ehlhardt for the purpose of bringing to the Divinity School a succession of religious leaders. The lecturer for 1967-68 was The Reverend Dr. Franz Hildebrandt, Professor of Christian

Theology, Drew Theological Seminary. His subject was "Dietrich Bonhoeffer—The Man."

Symposium of Christian Missions

Each year, in collaboration with the Methodist Board of Missions, the Divinity School presents a team of distinguished participants in the world mission of the Church, usually including a secretary of missionary personnel and a Duke alumnus serving overseas. The general aims are "to inform students and faculty of the philosophy and work of missions as seen through the personal experience of speakers; to educate present and future ministers so that they will have a vital concern for the promotion of missionary education in the local church; and to evaluate the missionary enterprise as a significant force in the revolutionary world." The featured speaker in 1968 was The Reverend Doctor José Miguez Bonino, President of Union Theological Seminary in Buenos Aires, Argentina, who spoke on "The Impact of Vatican II on Protestant-Catholic Relations in Latin America."



Community Life

Divinity School Choir

A student organization of long standing is the Divinity School Choir. Membership in the Choir is open to all qualified students. The Choir sings regularly for the daily corporate worship and at special seasonal programs and services. New members are chosen by informal auditions held during the first week of fall classes. Auditions are arranged for all who are interested.

The Coordinating Council for Community Life

Beginning with the 1964-65 academic year, the Student Government Association was superseded by a Coordinating Council for Community Life. This Council is composed of representatives from the student body, faculty, administration, and Divinity Dames.

The purpose of the Council is, as the name implies, to coordinate the activities of the Divinity School community. Realizing that there are many shared interests and concerns within the community which cannot be expressed fully in a student body organization alone, the Council was created by a joint student-faculty committee and approved by participating groups.

The shared interests and activities of the community are expressed through the several committees of the Council. The Council has coordinating, reviewing, and initiating powers in matters affecting the common life.

Student members of the Council are elected by the three M.Div. classes, the M.R.E. candidates, and the Th.M. candidates. A student activity fee is collected at the beginning of each academic year to support the activities of the community. The fee, in recent years, has been six dollars ($6.00). The funds are administered through committees and are spent on such projects as missions, social action, social events, and student publications.

Other Organizations

Divinity Dames

The wives of Divinity School students have an organization through which there is opportunity for informal fellowship during the period of the students' residency. For the past several years lecture courses, running for two-week periods in the fall and spring semesters, have provided instruction in various aspects of parish life and in theological and Biblical subjects and issues. The Dean and faculty are concerned to assist the wife to understand her husband's vocation and to participate appropriately.

The Duke Endowment Student Association

The Duke Endowment Student Association is the organization of students who participate in the Summer Field Education Program.

At least six meetings per year are held for the purpose of fellowship and preparation for the summer field education responsibilities.

Publications

The Duke Divinity School Review

Three times each year (Autumn, Winter, and Spring) the Divinity School publishes a magazine designed to acquaint its readers with current theological thinking through the inclusion of public addresses given at the school, scholarly articles by faculty members and others, and book reviews. The *Review* is circulated free of charge to a mailing list of some 2,600, one-half of whom are alumni of the School and the other half

are interested friends, campus ministers, teachers, administrators, and librarians.

Directory and Response

In cooperation with the Dean's Office, students publish a faculty and student *Directory*. A monthly paper entitled *Response* is published under their editorship.



Admission

Requirements and Procedures for Admission

The Divinity School is a fully accredited member of the American Association of Theological Schools, and is one of twelve accredited seminaries of The Methodist Church. Candidates for admission must hold the degree of A.B., or its equivalent, based upon four years of work beyond secondary education in a college which is approved by one of the regional accrediting bodies, and their college records must be such as to indicate their ability to carry on graduate professional studies. They will be admitted without examination on presentation of an official, satisfactory transcript of college and all other academic credits which they may have secured. Recommendations from five responsible persons are required. Women will be admitted on the same basis as men.

Applications are evaluated with a view both to the academic achievement of the candidate and with reference to his personal and professional qualifications for the Christian ministry. While an academic average of less than "B minus" is ordinarily regarded as a disqualification for admission, nevertheless, the Committee on Admissions is impressed with a rising curve of achievement in the undergraduate program and makes its decision on the basis of the whole body of credentials of an applicant, including supporting letters of reference.

The applications of students from foreign countries will be considered, each on its own merits, the general principle being that training equivalent

to that of a baccalaureate degree from an accredited American college must have been secured.

In addition to an adequate academic preparation, applicants must satisfy the faculty as to their Christian character and purpose. A formal application blank may be secured from the office of the Divinity School. This must be filled out and returned by all candidates for admission. Applications received after May 1 cannot be assured of dormitory rooms for the ensuing academic year. *A minimum of thirty days is required to process any application, in many cases longer.*

No admission is final until approved by the Student Health Service, which requires a certificate of immunization and general health to be submitted not earlier than July 1 and not later than September 1.

Entering students are also required to take certain diversified tests administered by the Bureau of Testing and Guidance and by the Divinity School.

Persons who do not matriculate at the time for which they were originally admitted forfeit admission and must be formally readmitted. A student who withdraws from the Divinity School and desires to return at a later date must file with the Dean a written request for a leave of absence.

Applicants are expected on notification of admission to signify their acceptance within three weeks, and to pay an admission fee of $30.00. (Make check payable to Duke University and send to the Office of the Dean of the Divinity School.) This fee is applied to the regular first-term bill if the student matriculates; if he fails to do so, the fee is forfeited. This does not apply to the Summer Session.

Under the terms of the Selective Service Act, as it now stands, pre-enrollment for later formal admission may be granted to persons who meet the Divinity School standards and requirements for admission. Applications for pre-enrollment may be addressed to the Office of the Dean. Pre-enrolled students must send transcripts of each year's college work by June 15th of each year in which they are pre-enrolled. Pre-enrollment does not guarantee final admission, and a person who has been pre-enrolled for any length of time must send a transcript of work by February 1 of the year in which admission is sought. This must be accompanied by a letter from the college dean or other approved reference certifying to continued academic acceptability and good character and conduct.

Honors and Independent Studies Programs

Students desiring admission to the Honors and Independent Studies Program are referred to section on Admissions Procedures, p. 11.

Pre-Seminary Curriculum

The Divinity School of Duke University publishes as its own the official policy statement of the American Association of Theological Schools respecting undergraduate preparation for students expecting to enroll in graduate-professional theological studies.

"The student contemplating theological study should correspond at the very earliest opportunity with the school or schools to which he intends to apply and with the authorities of his church in order to learn what will best prepare him for the specific program he expects to enter. He will be likely to find under the guidance of the seminary that he should consider the following subjects:

English language and literature; history, including non-Western cultures as well as European and American; philosophy, particularly its history and its methods; natural sciences, both the physical and the life sciences; social sciences, where psychology, sociology, and anthropology are particularly appropriate; the fine arts and music, especially for their creative and symbolic values; Biblical and modern languages; religion, both in the Judaeo-Christian and in the Near and Far Eastern traditions.

Some seminaries require Greek or Hebrew for admission, and many advanced biblical courses are offered in the original tongues; modern languages have a less direct but immensely educative role and are required at the graduate studies level.

It is the understanding gained in these fields rather than the total of credits or semester-hours which is significant.

In many seminaries students who have been well prepared in religion and equipped with the tools of theological study will be set free, not to complete their theological course more quickly, but rather to pursue more advanced studies. The principle constantly to be kept in mind is not that of satisfying paper regulations and minimum requirements, but of making the most of opportunities for education."

Transfer of Credit

Under certain conditions transfer of credit from theological schools accredited by the American Association of Theological Schools is provided for by the Divinity School. Applications for transfer of credit will be ruled upon by the Committee on Admissions, and will be subject to evaluation in terms of the prevailing requirements of the Divinity School for graduation. *Ordinarily, credit from another institution will not be granted in amount exceeding one-half of the total credits required by the Divinity School for graduation.* A student applying for transfer of credit in excess of this amount may be required to pass such examinations as the Committee on Admissions may prescribe. In each case a letter of honorable dismissal from the school from which transfer is made is required along with transcript of academic credits.

Advanced Standing

Advanced standing allows entering students to begin work in any given field at a level higher than that of the core curriculum, or to substitute a specialized or cognate course for a core requirement.

Entering students with substantial undergraduate preparation in areas closely related to required courses of the Divinity School core curriculum may be eligible for advanced standing. While a student may be eligible for advanced standing in any subject, it is especially pertinent where students offer undergraduate majors of superior quality in Bible, religion, or philosophy. Students entering with six or more semester hours in the Greek language should consult the *Bulletin* under "Language Study" for a description of special privileges pertaining to their case. The fields in which entering students, by virtue of previous undergraduate study, are most likely to qualify for advanced standing are: Old Testament, New Testament, Types of Religious Philosophy, and Church History.

An entering student who offers not less than six semester hours of college credit, with a grade of "B" or better in one or more of these areas, may ordinarily anticipate advanced standing in corresponding required courses of the Divinity School core curriculum. All final transcripts will be studied, and advanced standing will be accorded to those who qualify under this provision.

A student who offers not less than three semester hours of college credit with a grade of "B" or better in one or more of these areas may, for satisfactory performance in a qualifying examination in the discipline, be granted advanced standing. Entering students who qualify under this provision must, at the time of application, make request for the privilege of sitting for such an examination.

Admission on Probation

Applicants for admission who are graduates of non-accredited colleges will be considered on their merits. Ordinarily, such applicants must show that they have attained a superior average for a four-year college course. Admission of such persons will, in every case, be on probation.

Applicants for admission who are graduates of accredited colleges but whose college transcripts do not fully meet Divinity School standards may be admitted on probation if their recommendations otherwise justify admission.

Probation means:

1. Students who during the first year of Divinity School work maintain less than a "C" average, including one or more failures, ordinarily will be required to withdraw from the School.
2. Students admitted on probation may carry only limited schedules of work, the amount to be determined by the Dean of Students.

3. A student admitted on probation ordinarily shall not be admitted for advanced standing.

Students whose work after admission is not satisfactory may be placed on probation.

Ministerial and Professional Qualifications

All students who are admitted to academic study in the Divinity School are subject to the established order of administrative regulations of the University and the accepted standards of personal conduct it enjoins; continuance in the School is conditioned upon acknowledgment of and compliance with such regulations and standards.

In particular, the University and the Divinity School expect and require students in candidacy for degrees, leading to a ministerial vocation, not only to exemplify the dignity of their calling, but to exhibit attitude and conduct conformable with the recognized standards of their Christian profession. While no honor system relating to academic integrity is formalized within the Divinity School, application for and admission to the courses of study assume the student's assent to full compliance with recognized standards of integrity in the fulfillment of academic tasks.

On this prior understanding, therefore, the University reserves the right, and matriculation by the student is a concession to this right, to compel the withdrawal of any student whose conduct at any time is not satisfactory to the University, even though no specific charge is made against the student.

As a graduate professional school of theology, the Divinity School expects, on the part of the student, an increasing manifestation of maturity and professional purposiveness in discharge of personal and academic responsibilities appropriate to the level of advanced academic work leading to the high and exacting demands of the Christian ministry. Since personal and professional qualifications for the ministry will be considered in evaluating the candidacy of all students for degrees, students whose persons, progress, or development indicate that they are not suited to the work of the ministry will not be allowed to continue in the School.

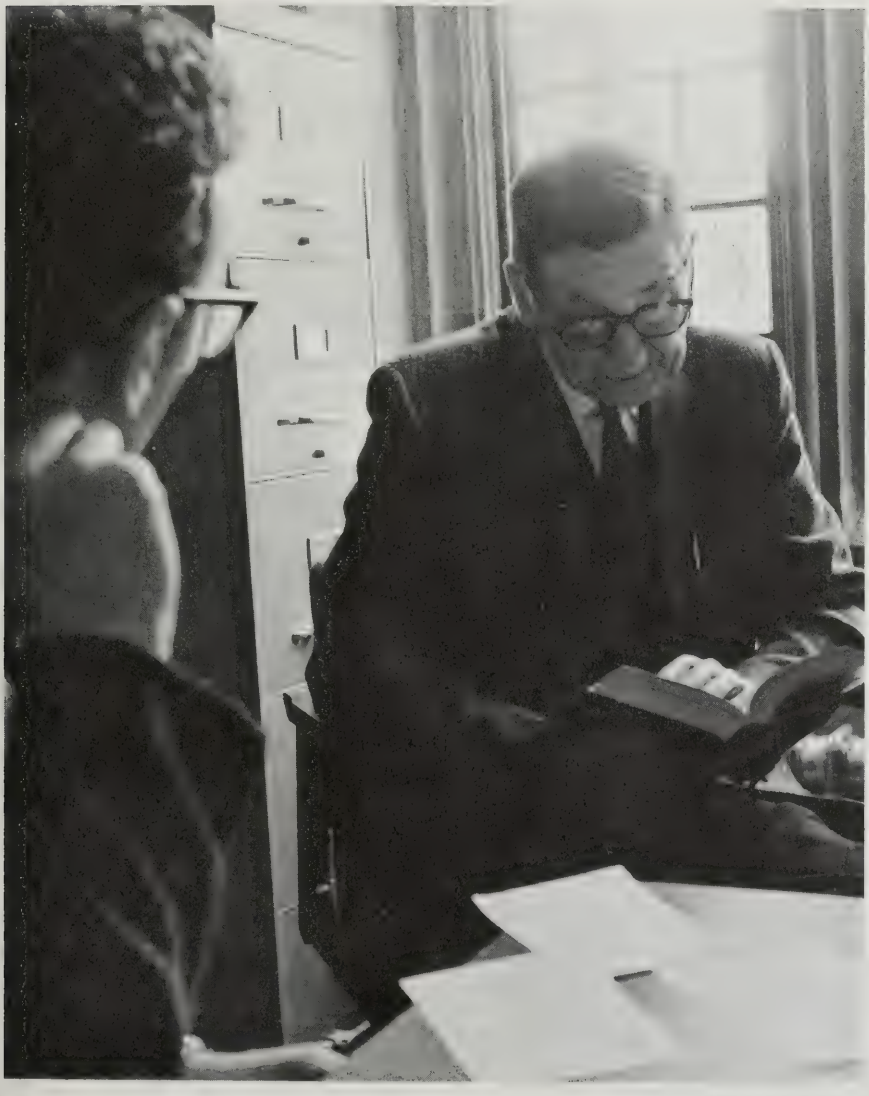
English Deficiency

Students whose English testing scores show marked deficiency or who are reported by their instructors as deficient in English usage will be required to take Remedial English in addition to meeting other requirements for the Master of Divinity degree.

Faculty Advisers

Each entering student is assigned to a faculty adviser at the time of registration and must report to his adviser. A student must consult with

his adviser in order to determine his course and cannot complete his registration without the signature of his adviser. It is understood that all students will continue to consult their advisers at the time of registration throughout the period of their academic work.



Financial Information

Fees and Expenses

Estimated Living Expenses

The total cost for a student to attend the Duke Divinity School varies according to individual tastes and requirements; however, experience indicates that a single student may expect to spend from $2200 up, with the average approximately $2400, and a married couple may expect to spend from $3700 up.

Master of Divinity and Master of Religious Education Candidates

The table below lists only basic minimum expenditures. In addition to the fees cited here, there is an admission fee of $30.00 which is applied to the first term bill and a room deposit of $25.00. (See the relevant sections in Admissions and Housing for full details.)

	Per Semester	*Per Year*
Tuition—M.Div. and M.R.E.	$312.50	$625.00
General Fee—M.Div. and M.R.E.	56.50	113.00
Approximate cost of meals	300.00	600.00
Room (double), Graduate Center	162.50	325.00

A student who is a candidate for either the M.Div. or M.R.E. degree shall be liable for the Tuition and General Fee for the number of semes-

ters required to complete the degree under the normal semester load. The M.Div. candidate will pay tuition for six (6) consecutive semesters and the M.R.E. candidate for four (4) consecutive semesters. If extra semesters are required to complete the degree, there will be no tuition for the extra semesters; however, the General Fee will be payable on a prorated basis.

The General Fee is in lieu of all special charges, and includes the following fees: matriculation, medical (provided student is taking at least seven hours), library, damage, commencement, and diploma.

Master of Theology Candidate

A student who is a candidate for the Th.M. degree will be liable for Tuition and General Fee, combined, on the basis of 24 semester hours (newly-adopted requirement replacing previous requirement of 30 hours), at the rate of $30.00 per semester hour. All other costs and regulations for the Th.M. degree are the same as those for the M.Div. and M.R.E. degrees.

Special Student

A Special Student is one who is enrolled for academic credit, but who is not a candidate for a degree. The Tuition and General Fee will be charged on a prorated basis. Other costs and regulations are the same as those for the M.Div. and M.R.E. candidates. No financial aid is available.

Audit Fee

Anyone seeking to audit a course in the Divinity School must, with the consent of the instructor concerned, secure permission from the Dean's office. In accordance with the general University practice, a fee of $25.00 per course will be required of all auditors who are not enrolled students.

Athletic Fee. Divinity School students may secure admission to all regularly scheduled University athletic contests held on the University grounds during the entire academic year by payment of the athletic fee of $15.00 per year, plus any Federal tax that may be imposed. This fee is payable in the fall semester.

Payment and Penalty

Both the Tuition and the General Fee are due and payable not later than the day of registration for that semester. In unusual circumstances, a student may secure permission of the Dean to delay registration, provided it is not beyond the first week of classes and the student pays the $5.00 late registration fee. No student is admitted to classes until arrangements are made with the Bursar of the University for the settlement of fees.

Students matriculating in either semester at a date later than that

prescribed in the catalogue shall pay to the Bursar of the University a penalty of $5.00. After the day of registration no refund of the General Fee or Tuition will be made except for involuntary withdrawal to enter the Armed Services.

Students who are reported by the Treasurer's Office as delinquent in their accounts will be debarred from credit in courses until cleared by the Treasurer's Office. Transcripts will not be issued for delinquent students.

Student Health

The payment of the General Fee entitles the student who is taking a minimum of seven hours to full medical and surgical care, with the exceptions noted below. This service is under the direction of the University Physician with the cooperation of the staff of Duke Hospital. It includes hospitalization, medical and surgical care, drugs, dressings, X-ray studies, and ward nursing. A charge for board is made at the same rate as in the University dining halls. Refraction of eyes, treatment of teeth, and of all chronic conditions, such as the removal of diseased tonsils, are not included in this service. The cost of any necessary braces and orthopedic appliances, as well as of special nursing, must be borne by the student.

Since the Student Health Program *does not cover students while away from the Duke Campus,* it is imperative that student pastors and assistant pastors (winter and/or summer) who are subjected to the hazards of highway travel with great frequency, secure complementary health and accident insurance for the full twelve month period. Students whose course load entitles them to full coverage under the Student Health Program are eligible to secure a complementary insurance policy, providing protection for the entire calendar year, through the University. Costs and details of the complementary policy are available from the Dean of Students. *Foreign students are required to hold this or another acceptable policy.*

Married students are required to carry insurance coverage for their dependents, providing for hospital, medical, and surgical care.

Living Accommodations

*Housing**

The Graduate Center is available to men and women enrolled in the Divinity School. This residence hall has separate living sections for both

*Information pertaining to residence halls and Duke University Apartments is subject to change prior to September, 1968.

men and women who jointly use the commons facilities and dining room. The rooms are equipped for two persons and the rental charge for a double room is $162.50 each semester per occupant. The rental charge for a single room is higher.

A graduate section in Hanes Annex near the Graduate Center is available for women students in the Divinity School who desire to reside in University residence halls. The rental charge is $177.50 per semester for each occupant. Town House Apartments are also available for graduate women students. These air-conditioned apartments are each equipped for three students. The rental rate for each occupant is $247.50 per semester. Details of housing for graduate women will be provided on request to the Office of Housing Management, Duke University, Duke Station, Durham, North Carolina.

Duke University Apartments, which consist of efficiency, one- and two-bedroom apartments, are available to married graduate students. The apartments are complete with basic furnishings and the current rental charges per month are $70.00 for the efficiency, $90.00 for the one-bedroom, and $110.00 for the two-bedroom. Heat, electricity, except for window fans and air conditioners, hot and cold water, garbage and trash collection, and maintenance of grounds are all included in the rental charge. For further information on married student apartments, write to the Office of Housing Management, Duke Station, Durham, North Carolina.

Reservations and Deposit Fee

Residence hall rooms, graduate women's apartments, and Duke University Apartments may be reserved by new applicants only if they have been accepted officially for admission to the Divinity School. Applications for rooms and apartments should be made to the Office of Housing Management, Duke Station, Durham, North Carolina. A $25.00 room deposit is required of each applicant before a residence hall room or women's apartment reservation is made. The initial room deposit is effective during the student's residence in the University residence halls or graduate women's apartment if attendance is continuous in regular academic years. The deposit will be refunded under the following conditions:

1. Within thirty days after the student has been graduated provided written notice is received at the Housing Office requesting refund.
2. Upon withdrawal from Duke University Residence Halls by students enrolled on the semester basis, provided written notice is received in the Housing Office by August 1st for cancellation of a reservation for the fall semester, and not later than January 15th for cancellation of a reservation for the spring semester.

3. When the reasons requiring withdrawal are beyond the student's control.

No refund of deposit will be made until the occupant has checked out of his room through the Office of Housing Management and has settled his account with the Bursar.

A resident student, in order to retain his room for the succeeding academic year, must make application at the Office of Housing Management for confirmation of the reservation.

The authorities of the University do not assume responsibility for persons selected as roommates. Each student is urged to select his roommate when the room is reserved. Any student who occupies a double room without a roommate will be given written notice from the Housing Office to obtain a roommate or he may be required to pay the rental consideration for the whole room. Apartment regulations are similar.

Any exchange of rooms must be made at the Housing Office. Persons exchanging rooms without the approval of the Housing Office will be subject to the charges for both rooms.

Rooms and apartments for graduate women are rented for the academic year but for no period of less than one semester without special arrangements. After the day of registration, no refund of room rent will be made except for involuntary withdrawal to enter the Armed Services. Such refunds will be made in accordance with the University's established schedule. Regulations governing the occupancy of rooms will be supplied by the Office of Housing Management to those students who make application for housing. Occupants are expected to abide by these regulations.

Dining Halls

Food service on both the Woman's College Campus and the West Campus is cafeteria style. The cost of meals approximates $300.00 per semester depending upon the needs and tastes of the individual. The dining facilities on the West Campus include two cafeterias with multiple choice menus and, in addition, the Oak Room, where full meals and *a la carte* items are served. The Graduate Center has a cafeteria which is open at meal hours and a coffee lounge which is open until 11:00 p.m. The prices are the same as in the West Campus Union.

Motor Vehicles

Each student possessing or maintaining a motor vehicle at Duke University shall register it annually at the begining of the fall semester. If a student acquires a motor vehicle and maintains it at Duke University

after academic registration, he must register it within five (5) calendar days after operation of vehicle on campus begins. Resident students are required to pay an annual parking fee of $30.00 for each automobile and $10.00 for each two-wheeled motor vehicle. The proper registration emblem must be displayed at all times.

At the time of registration of a motor vehicle, the following documents must be presented: (a) state vehicle registration certificate; (b) valid driver's license; (c) satisfactory evidence of automobile liability insurance coverage within limits of at least $10,000.00 per person and $20,000.00 per accident for personal injuries, and $5,000.00 for property damage, as required by North Carolina Motor Vehicle Law.

Students will receive a copy of the Parking, Traffic and Safety Regulations when they register.

Student Aid

A student should select his school on the basis of educational opportunity. At the same time financial consideration will be a legitimate and often pressing concern. Each student should formulate at least a tentative plan for financing his seminary education. While the exact method of financing the full theological degree cannot be assured at the beginning, he should have a clear understanding of his expenses and the sources of income for his first year and the assurance that there exist ways of financing the subsequent years.

The Committee on Scholarship and Financial Aid will counsel the student concerning financial needs and possible resources. A first principle of our financial aid program is that basic financial responsibility belongs to the student who is expected to rely upon his personal and family resources and his earning and borrowing power. Financial aid is provided to supplement student resources to the extent of demonstrated need.

In estimating student budgets, the Financial Aid Office adds to the fixed cost of educational expenses (tuition, fees, etc.) the average cost per student, providing for variations occasioned by the student's status (single, married, dependents, student pastor, indebtedness, etc.) at the time of admission. Students are allowed to exercise freedom and express their legitimate individuality in the use of their funds, but financial aid support is necessarily determined by what is considered "average" for students within the same category. To maintain a creative and at the same time a realistic program of financial aid, it is essential both to understand and to follow basic principles undergirding the program.

Resources are not sufficient to guarantee the complete underwriting of every student's seminary education. However, it is the goal of the

Financial Aid Office to assist each student in planning his financial program so that he will incur as little indebtedness as possible.

The Financial Aid Office constantly reviews available resources in order to assist the greatest number of students. It recommends assistance on the basis of demonstrated need and then within the limits of the conditions set forth governing each resource.

Financial assistance may consist of scholarships, loans, tuition grants, grants-in-aid, field education grants, and employment which may be worked out in various combinations on a year to year basis with reapplication and review each year.

Financial Resources

Personal

These may be savings and earnings, gifts from family and friends, and, if married, earnings of spouse and gifts from parents of spouse. In calculating anticipated income, the student first considers his own resources.

Church

Many local churches and conferences or other governing bodies provide gifts and grants for theological education, such as Ministerial Training Funds which provide grants and/or service loans to theological students. The student makes application to his own church, Annual Conference, Presbytery, or other governing body. The Financial Aid Office cooperates with these church agencies in making recommendations and in handling the funds.

The Divinity School

Scholarships

A limited number of scholarships are available to encourage qualified students to pursue their preparation for the Christian ministry. Such students ordinarily will not be eligible for remunerative employment during the academic year. When a student holding a scholarship is permitted to engage in remunerative employment, it is understood that adjustments may be made in the total Scholarship and Financial Aid Program for that student.

Junior Merit Scholarships. Junior Merit Scholarships are available to a limited number of students who have maintained an outstanding undergraduate record in scholarship and community life. Junior Merit Scholar-

ships consist of: grants of $775; tuition grants in varying amounts up to full tuition if demonstrated need warrants; and, if the student applies, preference in the selection of students for the Summer Endowment and Field Education Program.

National Methodist Scholarships. The General Board of Education of the Methodist Church makes available two $500 scholarships to rising middlers who have made outstanding records in the first-year class.

Middler Academic Scholarships. A limited number of scholarships of $700 each are made available to rising middlers on the basis of academic excellence and leadership potential.

Rowe Scholarships for Seniors. Each year a limited number of Merit scholarships in varying amounts are awarded to rising seniors who have achieved academic excellence and who give unusual promise of service in the pastoral ministry.

Foreign Student Scholarships. In cooperation with the Crusade Scholarship Committee of The Methodist Church and other authorized church agencies students are selected and are admitted to courses of study. Scholarships for such students are provided from the Lewis Clarence Kerner Scholarship Fund and from individual Churches and private philanthropy.

Th.M. Scholarships. A limited number of merit scholarships, based on academic achievement and financial need, are awarded each year.

M.R.E. Scholarships. A limited number of scholarships, based on need and academic achievement in undergraduate school, are available.

Tuition Grants

These, in varying amounts commensurate with need, are available upon application to the Committee on Scholarship and Financial Aid. Currently enrolled students who are eligible for consideration must apply in February prior to the academic year for which a tuition grant is requested. Entering students may apply when admitted.

Field Education Grants

Varying amounts are made available through the Divinity School to students who choose to make participation in the Endowment and Field Education Program an integral part of their seminary training. This Program includes the following:

1. Summer Assistants.
2. Winter Assistants.
3. Student Pastors. See full description under section on Field Education.

Loans

Loan funds held in trust by the University, as well as Methodist Student Loans and funds supplied by the Federal Government, through the National Defense Education Act of 1958, are available to qualified students. Submit application by July 1.

Note: Unless otherwise indicated all correspondence concerning financial aid should be directed to: Financial Aid Office, The Divinity School, Box 4814, Duke Station, Durham, N.C.

Employment

Students or wives desiring employment with the University should apply to the Director of Personnel, Duke University, Durham, North Carolina. Students or wives make their own arrangements for employment either in the City of Durham or on campus.

Financial Aid Resources

Certain special funds have been established, the income from which is used to provide financial aid through scholarships and Field Education Grants for students wishing to secure training in preparation for Christian ministry. The resources listed below include endowed funds and sources of annual contributions.

R. Ernest Atkinson Legacy

This legacy was established in 1952 under the will of the Reverend R. Ernest Atkinson of Richmond, Virginia, who was a member of the Trinity College Class of 1917.

Mary Reynolds Babcock Foundation Scholarships

Through the Mary Reynolds Babcock Foundation of Winston-Salem, North Carolina, a limited number of scholarships in an amount not exceeding $1,400 per year are granted to students in candidacy for the B.D. degree, on nomination and decision of the Dean and Committee on Scholarships and Financial Aid.

E. M. Cole Fund

This fund was established in 1920 by Mr. Eugene M. Cole, a Methodist layman of Charlotte, North Carolina.

Dickson Foundation Awards

The Dickson Foundation, Incorporated, of Mount Holly, North Carolina, has created a scholarship program for the purpose of providing assistance to Divinity students who demonstrate financial need and superior ability.

Preference is given to children of employees of American and Efird Mills, Incorporated, and its subsidiaries, to residents of Gaston, Caldwell, and Catawba Counties, and to North Carolinians.

The Duke Endowment

Among the beneficiaries of The Duke Endowment, established in 1924, are the rural Methodist churches of the two North Carolina Conferences. Under the Maintenance and Operation Program, Field Education Grants are available for Duke Divinity School students to participate as assistant pastors in rural Methodist churches under the Endowment and Field Education Program.

N. Edward Edgerton Fund

This fund was established in 1939 by Mr. N. Edward Edgerton of Raleigh, North Carolina, an alumnus of Duke University of the Class of 1921.

Thomas Jefferson Finch Scholarship

In 1955 Mr. George David Finch, '24, and Mr. Brown Faucette Finch, '54, established an annual scholarship in the amount of $650 a year in memory of Mr. Thomas Jefferson Finch, Trinity College Class of 1884, who was the father and grandfather of the donors.

The James A. Gray Fund

In 1947 Mr. James A. Gray of Winston-Salem, North Carolina, presented the fund, which bears his name, to the Divinity School for use in expanding and maintaining its educational services in behalf of North Carolina churches and pastors.

P. Huber Hanes Scholarship

Mr. P. Huber Hanes of Winston-Salem, North Carolina, an alumnus of Duke University of the Class of 1900, has established for Duke University an annual scholarship fund, a portion of which is used to provide financial assistance for Divinity School students.

The Franklin Simpson Hickman Memorial Fund

In the summer of 1966 Mrs. Veva Castell Hickman established a memorial fund in memory of her husband, The Reverend Professor Franklin Simpson Hickman, who served as Professor of the Psychology of Religion, 1927-1953; was Dean of the Chapel of Duke University, 1932-48; and the first Preacher to the University, 1938-53. The income of the Fund will give support to two enterprises: (1) a regular visiting lecturer in preaching, and (2) financial aid to students in the Master of Theology program who wish to specialize in the psychology of religion, or the psychological study of religious experience.

George M. Ivey Scholarship Fund

This fund was established in 1948 by gift of George M. Ivey, of Charlotte, North Carolina, an alumnus of Duke University of the Class of 1920.

Lewis Clarence Kerner Scholarship

This scholarship was established in 1959 by Beatrice Kerner Reavis, of Henderson, North Carolina, in memory of her brother, Lewis Clarence Kerner, and designated for the assistance of native or foreign-born students preparing for service in world Christian missions.

Laurinburg Christian Education Fund

This fund was established December 11, 1948, by gift through the Methodist College Advance Fund.

Myers Park Scholarship Fund

This fund was established in 1948 by members of the Myers Park Methodist Church, Charlotte, North Carolina.

W. R. Odell Scholarship

This fund was established in 1946 by the Forest Hills Methodist Church, Concord, North Carolina.

Jesse M. Ormond Scholarship Fund

In 1948 the North Carolina Conference established a fund in honor of Professor Jesse M. Ormond, who for many years was Director of Field Work and Professor of Practical Theology.

Gilbert T. Rowe Memorial Scholarship Fund

This scholarship fund was established in 1960 through the generosity of Divinity School Alumni and friends of the late Gilbert T. Rowe, Professor of Systematic Theology.

Elbert Russell Scholarship

This scholarship was established in 1942 by the Alumni Association of the Divinity School in honor of Elbert Russell, who served as Dean of the Divinity School and Professor of Biblical Theology.

Hersey E. Spence Scholarship

This scholarship was established in 1947 by the Steele Street Methodist Church of Sanford, North Carolina, in honor of Professor Hersey E. Spence, a former pastor of the congregation.

The Methodist Church

The Methodist Church makes a substantial contribution to the Divinity School by designating a certain percentage of its World Service offerings to the Divinity School.

The North Carolina and the Western North Carolina Conferences direct a certain percentage of their College Sustaining Funds to the Divinity School. The South Carolina Conference is a contributor to the Divinity School operational income.

The General Board of Education makes available annually two National Methodist Scholarships having a cash value of $500 each.

Local Methodist churches and individuals make contributions to the financial aid program of the Divinity School, thus making it possible to assign students under the Endowment and Field Education Program to urban and out of state churches.

Dempster Graduate Fellowships

The Methodist Board of Education offers each year the Dempster Graduate Fellowships for graduates of Methodist Theological Schools, who are engaged in programs of study leading to the degree of Doctor of Philosophy in Religion with a view to teaching in Methodist colleges and seminaries. Several Divinity School graduates have held these fellowships.

Foreign Scholarship Fund

Maintained through annual contributions of individuals and churches. Contributions for 1966-67 included: St. Paul's Methodist Church, Goldsboro, North Carolina, Hayes Barton Methodist, Raleigh, North Carolina.

Field Education

Its Nature and Purpose. Field Education is conceived to have a two-fold nature. (1) It is a vital part of the total education of the theological student, testing his motivation and fitness for the vocation of the ministry. (2) It is a symbol of a mutual relationship between the seminary and the local church, and it is an effective way of declaring and implementing the purpose of the seminary to serve the church as well as the student.

More specifically it is the purpose of Field Education to: (1) assist the student in understanding the nature and task of the local church; (2) study some of the practical problems involved in the care of the parish; (3) afford an opportunity for the progressive development of the student's knowledge and ministerial skills through responsible participation in the life of the church; (4) contribute leadership to the churches of the region; and (5) provide, in most instances, Field Education Grants to assist the student in defraying educational expenses.

Opportunities for participation in the Field Education program are made available through the cooperative efforts of The Divinity School, churches, pastors, and district superintendents, or equivalent officials of other denominations. The student must make application for the particular program in which he wishes to participate.

Types of Field Education. (1) Summer Assistant Pastors: Upon request of a church, a student is assigned by the Committee on Endowment and Field Education to serve ten weeks as an assistant. The student is provided board, room, laundry, necessary travel, and a Field Education Grant of $1,000.00. To participate, the student must complete the preparatory training sessions under The Duke Endowment Student Association. A majority of the students are assigned to Methodist rural

charges in the State of North Carolina. A limited number of entering students can be assigned; however, prior consideration is given to rising Middler and Senior students. Students transferring to another seminary are not eligible for assignment the summer prior to transfer.

(2) Winter Assistant Pastors: In consultation with the pastor, church leaders, district superintendents and/or other responsible leaders, students are assigned to serve as assistants during the academic year. The time element will vary from six to sixteen hours per week and the Field Education Grants will vary accordingly up to a maximum of $1,000.00. If more than 16 hours of service per week are required the student will be required to reduce his academic load.

(3) Student Pastors: A student may be appointed by an annual conference or other official agency of a recognized denomination to serve as a student pastor. The student must have the approval of the Director of Field Education, as agent of the Dean, before accepting an appointment as a student pastor. All *new* student pastors must participate in an orientation and training program. All student pastors enroll for not less than seven nor more than ten hours per semester, thus requiring four academic years to complete the M.Div. degree. If the charge being served is located beyond 50 to 55 miles from the campus, the student is required to live in Durham or vicinity during the academic week, Monday 12:00 noon through Friday 4:00 p.m. Salaries and other forms of support are arranged by church officials in keeping with denominational policies and are reported to The Divinity School.

(4) Internships: An expanding program of nine to twelve month internships is currently available at the Divinity School. Academic credit may be given upon the satisfactory completion of a relevant academic study program and periodic reports to the assigned faculty adviser are required. Students who have completed at least two full years of their seminary curriculum are eligible to apply.

(5) Other Church-Related Positions: These consist of teaching church school classes and counseling youth groups, and are expected to require no more than three to six hours per week. These positions may or may not involve Field Education Grants.

Supervision. Through the coordinated efforts of The Divinity School, local churches, district superintendents, and pastors there is continuous supervision of all students participating in the Endowment and Field Education Program. Under the general direction of the Director of Field Education, members of the faculty share in administering this program.

Supervision is carried on through: (1) training sessions required of all students participating in the program; (2) regular visits by faculty members to charges served by student pastors and assistant pastors, followed by student-faculty conferences; (3) seminars for local supervisors; (4) regular reports from all students and charges to the Endowment and Field Education Office.

The Summer Session of the Divinity School

Summer—1968

Class enrollments will be controlled as occasion may arise so as to secure a fairly even distribution among the courses offered in each term.

First Term: **(Registration June 11, Classes begin June 12 and end July 17)**

124 (DS). ***Moral Theology in the Twentieth Century.*** Critical and comparative examination of ethical theory as exhibited in the work of selected contemporary theologians. 7:40-9:00. 3 s.h. *Smith*

209 (DS). ***Old Testament Theology.*** Studies of the Old Testament in regard to theological themes and content. Prerequisite O.T. 11-12 or equivalent. 9:20-10:40. 3 s.h. *Tucker*

277A (DS). ***Clinical Pastoral Education II:*** CPE in the General Hospital Setting. A: Summer Quarter of CPE. By permission of Director of Studies in Pastoral Care. 4 s.h. *Staff*



Courses of Instruction*

Required courses are numbered from 9 to 70. Elective courses carrying credit in the Divinity School only are numbered from 71 to 199. Courses approved for credit in both the Divinity School and the Graduate School of Arts and Sciences are numbered above 200. Lists of courses to be offered in any semester will be available at the time of each registration.

Junior Seminars, Colloquia, and English Bible

9. ***Faith, Church, and World.*** Interdisciplinary seminars for Juniors, relating current theological discussion to the students' situations in the church and the world. 2 s.h. *Staff*

10. ***Church and Ministry Today.*** 2 s.h. *Staff*

Junior Colloquia, I and II. Unstructured dialogue groups for Juniors. 1 s.h. each semester. *Staff*

The English Bible Examinations are retained as graduation requirements in the new curriculum. ***English Bible I (Old Testament)*** and ***English Bible II (New Testament)*** will be offered as non-credit courses to aid the student in preparation for the English Bible Examinations. These requirements apply to both the M.Div. and M.R.E. degrees. *Staff*

*On approval of the Dean, courses offered in the Graduate School of Arts and Sciences other than those approved for credit in the Divinity School may be approved for credit in individual cases, provided no equivalent course is offered in the Divinity School; each case to be decided on its merits.

I. Biblical Studies

Old Testament

11. ***Introduction to the Old Testament.*** The origin, literary forms, and contents of the books of the Old Testament in their geographical and historical setting to the Exile. 3 s.h. *Tucker*

12. ***Introduction to the Old Testament.*** Introduction to an interpretation of Exilic and post-Exilic prophecy, Psalms, wisdom literature, the Chronicler, apocalyptic, and the Apocrypha. 3 s.h. *Efird or Stinespring*

101. ***Post-Exilic Prophecy.*** A study of the post-Exilic prophets from Ezekiel to Daniel, with special reference to Messianic prophecy and related theological problems. 2 s.h. *Stinespring*

106. ***Exegesis of the English Old Testament.*** A. A book of the Pentateuch; B. A prophetical book; C. A historical book; D. Selected poetical materials. (O.T. 106 A, O.T. 106 B, O.T. 106 C, and O.T. 106 D are separate courses, offered in different semesters.) Prerequisite: O.T. 11 or the equivalent. 3 s.h. *Staff*

196. ***The Bible and Recent Discoveries.*** A survey of the contribution of the cultural setting of the Bible as an aid to its understanding. 2 s.h. *Stinespring*

201-202. ***First Hebrew.*** The principles and structure of the Hebrew language with translation of selected Old Testament narratives. One year of Greek prerequisite. 6 s.h. *Stinespring*

207. ***Second Hebrew.*** Historical Hebrew grammar with reading and exegesis of Old Testament prose (Pentateuch and historical books in alternate years). First semester. 3 s.h. *Staff*

208. ***Second Hebrew.*** Historical Hebrew grammar with reading and exegesis of Old Testament poetry (Prophets and the Writings in alternate years). Second semester. 3 s.h. *Staff*

209. ***Old Testament Theology.*** Studies of the Old Testament in regard to theological themes and content. Prerequisite O.T. 11-12 or equivalent. 3 s.h. *Tucker*

302. ***Studies in the Intertestamental Literature.*** Selected documents of the Apocrypha and Pseudepigrapha examined exegetically and theologically in their relation to post-Exilic Judaism. Prerequisite: permission of the instructor. 3 s.h.

304. ***Aramaic.*** A study of the Aramaic portions of the Old Testament, and selected passages from the Targums, Midrashes, and Talmuds. 3 s.h. *Stinespring*

305. ***Third Hebrew.*** An interpretative study of late Hebrew prose, with readings from Chronicles, Ecclesiastes, and the Mishnah. 3 s.h. *Stinespring*

306. ***Language and Literature of the Dead Sea Scrolls.*** A study in interpretation. Prerequisite: a knowledge of Hebrew. 3 s.h. *Wintermute*

307. *Syriac.* A study of the script and grammar, with readings from the Syriac New Testament and other early Christian documents. Some knowledge of Hebrew and Aramaic prerequisite. 3 s.h. *Stinespring*

309. *History of the Ancient Near East.* A specialized study of the civilizations of Egypt, Palestine, Syria, and Mesopotamia in the light of Biblical archaeology. 3 s.h. *Tucker*

310. *Old Testament Prophecy.* The prophetic movement in Israel with special emphasis on the theological standpoint of the prophets of the eighth century B.C. Prerequisites: O.T. 11 or equivalent. 3 s.h. *Stinespring or Tucker*

350-351. *Seminar in Old Testament.* Research and discussion on selected problems in the Old Testament and related fields. 3 s.h. *Staff*

**History of Art 215. Religious Art of the Ancient Near East.* The development of art, particularly architecture and sculpture, as the material expression of religious ideas in Egypt, Mesopotamia, and in part Syria and Palestine to the Persian conquest. 3 s.h. *Markman*

**History of Art 216. Religious Art of the Classical World.* The religious art, particularly architecture and sculpture, of Greece and Rome with special emphasis on monuments in the Near East. 3 s.h. *Markman*

New Testament

18. *Early Christian Life and Literature.* A basic study of the civilization in which Christianity began; the origin and development of the Christian Church and its literature through the second century. 3 s.h. *Efird*

19. *Introduction to New Testament Theology.* A constructive analysis and exposition of the positive doctrinal content of the New Testament. Prerequisite: N.T. 18. 3 s.h. *M. Smith*

103-104. *Hellenistic Greek.* Designed for beginners to enable them to read the Greek New Testament. 6 s.h. (Two sections) *Staff*

105. *Studies in Paul.* An investigation of Paul's apostolate based upon the Acts and the Epistles with attention to Paul's theology as reflected in selected passages. 3 s.h. *Efird*

107. *The Church in the New Testament.* An exegetical consideration of the important New Testament texts relevant to the development of church order, ministry, sacraments, and/or other important dimensions of the primitive community and its self-consciousness. Prerequisite: N.T. 18. or equivalent. 3 s.h. *M. Smith*

116. *Exegesis of the English New Testament I.* A. Luke-Acts; B. Galatians and I Corinthians; C. The Pastoral Epistles; D. II Corinthians. (N.T. 116 A, N.T. 116 B, N.T. 116 C, and N.T. 116 D are separate courses, offered in different semesters.) 3 s.h. *Staff*

117. *Exegesis of the English New Testament II.* A. The Gospel and

*Course offered in the Graduate School of Arts and Sciences which is credited toward the degree of Master of Divinity.

Epistles of John; B. Romans. (N.T. 117 A and N.T. 117 B are separate courses, offered in different semesters.) 3 s.h. *Staff*

118. ***The New Testament in Greek.*** Readings in the Gospels. 3 s.h. *Staff*

119. ***The New Testament in Greek.*** Readings in the Epistles. 3 s.h. *Staff*

225. ***Living Issues in New Testament Theology.*** Examination of recent major questions of debate in the New Testament field. Prerequisite: N.T. 19. 3 s.h.

226. ***Exegesis of the Greek New Testament I.*** A. Mark and Matthew; B. Romans; C. Colossians and Ephesians; D. II Corinthians. (N.T. 226 A, N.T. 226 B, N. T. 226 C, and N.T. 226 D are separate courses, offered in different semesters.) Prerequisite: N.T. 103-104. 3 s.h. *M. Smith or Young*

227. ***Exegesis of the Greek New Testament II.*** A. Luke-Acts; B. Galatians and I Corinthians; C. The Pastoral Epistles; D. The Apocalypse. (N.T. 227 A, N.T. 227 B, N.T. 227 C, N.T. 227 D are separate courses, offered in different semesters.) Prerequisite: N.T. 103-104. 3 s.h. *M. Smith or Young*

258. ***Coptic.*** Introduction to the Sahidic dialect with selected readings from Christian and Gnostic texts. Prerequisite: at least one year of Greek. 3 s.h. *Wintermute*

312. ***Pauline Theology.*** Studies in aspects of Paulinism in the light of recent scholarship. 3 s.h. *Davies*

314. ***Judaism and Christianity in the New Testament.*** Their interaction. 3 s.h. *Davies*

319. ***The Gospel According to St. Matthew in Recent Research.*** 3 s.h. *Davies*

340-341. ***Seminar in the New Testament.*** Research and discussion on a selected problem in the Biblical field. 3 s.h. *M. Smith*

345. ***The Epistle to the Hebrews in Recent Research.*** Intensive attention to the text and to secondary sources. 3 s.h. *Davies*

****Greek 257.*** The social and cultural history of the Hellenistic world from Alexander to Augustus. 3 s.h.

****Latin 258.*** The social and cultural history of the Graeco-Roman world. 3 s.h.

II. Historical Studies

Church History

13. ***History of the Church to the Protestant Reformation.*** A survey through the fifteenth century in terms of spiritual genius, organizational

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development, great literature, and representative movements. 3 s.h. *Petry*

14. ***History of Modern European Christianity.*** A survey of the main currents in Reformation and post-Reformation church history. 3 s.h. *Hillerbrand*

85. ***Seminar in Modern European Christianity.*** A seminar devoted to the study of select aspects of Reformation and Post-Reformation Church History. This year the seminar will consider Reformation and Post-Reformation Confessions of faith. Prerequisite: C.H. 13-14. 2 s.h. *Hillerbrand*

137. ***Religious Leaders in Christian History.*** Representative leaders in the early and medieval church studied in relation to contemporary churchmanship. Prerequisite: C.H. 13. 3 s.h. *Petry*

138. ***Great Books in Christian History.*** An intensive study of Augustine's *Confessions,* Thomas à Kempis' *Imitation of Christ,* Erasmus's *Complaint of Peace,* Luther's *Christian Liberty,* Calvin's *Instruction in Faith,* and Andrewes' *Private Devotions.* 3 s.h. *Petry*

139. ***Methodism.*** A study of Methodist societies in England and the developing church in America as they gave rise to such historic issues as polity, education, division, and reunion. Prerequisite: C.H. 13. 2 s.h. *Petry*

140. ***The Rise of Methodism and the Anglican Background.*** The Methodist societies within the Church of England to the death of Wesley. For Seniors. 3 s.h. *Baker or Rogers*

(Students are advised that either C.H. 139 or C.H. 140 will satisfy the Methodist Discipline Requirement No. 344.)

142. ***British Methodism after Wesley.*** British Methodism in its nineteenth and twentieth century development. 3 s.h. *Baker*

250. ***The Reformation of the 16th Century.*** An advanced study of the time between 1517 and 1555 with particular reference to the left wing movements of reform. 3 s.h. *Hillerbrand*

251. ***The Age of Counter-Reformation.*** An advanced study of the time between 1555 and 1650. 3 s.h. *Hillerbrand*

252. ***Pietism, Deism, Rationalism.*** An advanced study of the currents of European Christianity between 1650 and 1800. 3 s.h. *Hillerbrand*

253. ***History of Modern Catholicism.*** A survey of the main currents of Post-Tridentine Catholicism. 3 s.h. *Hillerbrand*

330. ***The Church in Europe Since 1800.*** Emphasis is placed on the relation of the church to the social, economic, and political life of Modern Europe. Particular attention is given to Papal pronouncements on social issues, the relationship of Eastern to Western institutions, and ecclesiastical historiography as it involves source editions, periodicals, and ecumenical literature. 3 s.h. *Petry*

331. ***The Social Message of the Early and Medieval Church.*** A study of

the social teachings and contribution of the Christian church prior to the Protestant Reformation. Prerequisite: C.H. 13. 3 s.h. *Petry*

332. *The Medieval Church.* Outstanding characteristics of the medieval church, emphasizing theory, polity, institutions, sacraments, and worship. Prerequisite: C.H. 13. 3 s.h. *Petry*

334. *Church Reformers and Christian Unity.* The work of such reformers as Marsilius of Padua, William of Ockham, Jean Gerson, Pierre d'Ailly and Nicholas of Cusa in relation to ecclesiastical schism and the search for Christian unity through representative councils. Prerequisite: C.H. 13. 3 s.h. *Petry*

336. *Christian Mysticism in the Middle Ages.* Source studies, in historical perspective, of such late medieval mystics as Bernard of Clairvaux, the Victorines, Ramon Lull, Meister Eckhart, Richard Rolle, Catherine of Siena, and Nicholas of Cusa. Prerequisite: C.H. 13. 3 s.h. *Petry*

Historical Theology

21. *The Theology of the Protestant Reformation.* The Reformation of the 16th century and its outcome in the 17th and 18th centuries. 3 s.h. *Grislis*

111. *Literature of the Latin Church.* Readings, in the Latin originals, of diverse kinds of writing produced by the Latin Church in various periods of its history. Prerequisite: Permission of instructor. 3 s.h.

120. *Faith and Heresy in the Early Church.* Studies in the origin and role of the Apostles', the Nicene, and the Chalcedonian Creeds in their contemporary setting. 3 s.h. *Grislis*

121. *Sacraments in the Christian Church.* Ecumenical studies in devotion and division: Baptism and the Lord's Supper. 3 s.h. *Grislis*

123. *The Theology of the Early Church.* An introduction to the history of doctrine from the 2nd to the 6th centuries. 3 s.h. *Grislis*

234. *The Theology of St. Thomas Aquinas.* A systematic interpretation of the thought of St. Thomas, with major emphasis on his specifically theological formulations, drawing upon the *Summa Theologica* and other relevant sources. 3 s.h. *Grislis*

240. *The Theology of Richard Hooker.* An exposition of the writings of the Systematic Theologian of Anglicanism in the sixteenth century. 3 s.h. *Grislis*

260. *Life and Thought of the Wesleys.* A seminar on John and Charles Wesley and their colleagues in relation to English culture and religion in the eighteenth century. Permission of instructor. 3 s.h. *Baker*

261. *The Theology of John Wesley.* A study of the development and structure of Wesley's theology, with special reference to his doctrines of man and salvation. 2 s.h. *Richey*

308. *Greek Patristic Texts.* Critical translation and study of selected

Greek texts illustrative of significant aspects of patristic theology and history from the second through the fifth century A.D. Prerequisite: reading knowledge of classical or N.T. Greek and C.H. 13. 3 s.h. *Young*

337. ***The Theology of Martin Luther.*** A critical and comparative examination of Luther's thought. 2 s.h. *Hillerbrand*

338. ***The Theology of John Calvin.*** An exposition of the *Institutes of the Christian Religion* in relation to cognate documents. Prerequisite: H.T. 21. 3 s.h. *Grislis*

362. ***The Theology of St. Augustine.*** A systematic exposition of the thought of St. Augustine, bishop of Hippo. 3 s.h. *Grislis*

American Christianity

28. ***History of American Christianity.*** A consideration of the nature of Christianity in America and the history of its development. 3 s.h. *Henry*

129. ***The Theology of American Methodism.*** A study of Methodist dogmatics from 1784 through 1903, including doctrinal standards and representative systems from Richard Watson through Henry C. Sheldon. 3 s.h. *Rogers*

199. ***The American Social Gospel.*** A study of Protestant social thought and action in America since 1865. 3 s.h. *Henry*

296. ***Religion on the American Frontier.*** A study of the spread of evangelical Christianity as a theological and cultural phenomenon of the American West. Prerequisite: A.C. 28. 3 s.h. *Henry*

372. ***Theology of Paul Tillich.*** An examination of Tillich's philosophical theology. 3 s.h. *Robinson*

385. ***Religion in American Literature.*** A critical study of the meaning and value of religious motifs reflected in American literature. 3 s.h. *Henry*

395. ***Christian Thought in Colonial America.*** Exposition of the main currents in Protestant theology. 3 s.h. *Henry*

396. ***Liberal Traditions in American Theology.*** A study of the main types of modern religious thought, beginning with the theology of the Enlightenment. 3 s.h. *Henry*

397. ***Contemporary American Theology.*** A critical appraisal of major tendencies. 3 s.h. *Henry*

World Christianity

24. ***The Christian World Mission.*** A study of theological foundations, guiding principles, and contemporary problems of the World Christian Community. 3 s.h. *Lacy*

133. ***History of Christian Missions.*** A survey of the spread of Chris-

tianity with special emphasis on 19th and 20th century Protestantism. 2 s.h. *Lacy*

135. ***Area Studies of the Christian Church.*** The cultural setting and current programs and policies of the Church in one of the following areas: (a) Latin America, (b) India and Pakistan, (c) Africa, (d) Southeast Asia, (e) Japan-Korea-Philippines, (f) Moslem Lands, or (g) United States Home Missions. (The area of study to be determined by student interest in consultation with the instructor.) 2 s.h. *Lacy and Others*

156. ***The Ecumenical Movement.*** Its contemporary development, structures, activities—and problems, against the background of Church unity and disunity. 3 s.h. *Lacy*

386. ***Seminar: Christianity in Dialogue with Other Faiths.*** Contemporary currents of Christian thought as they relate to resurgent non-Christian religions and involve new formulations of a theology of mission. 3 s.h. *Lacy*

See also: C.Ed. 126, Ch.E. 190, Ch.E. 292, and Ch.E. 333.

History of Religions

158. ***Contemporary Non-Christian Religions.*** Critical consideration of contemporary conditions in major non-Christian traditions, with special reference to Hinduism, Buddhism, Islam, and African Religions. 3 s.h. *Sullivan or Ricketts*

180. ***Religions of the Near East.*** Historical and theological introduction to the major indigenous traditions of the Near East, especially Zoroastrianism, and Islam. 3 s.h. *Partin*

182. ***Religions of India.*** Historical and theological introduction to Indian religious life and thought. The development of Buddhism is covered, as well as Jainism and Sikhism, along with the various modes of Hinduism. 3 s.h. *Sullivan*

280. ***The History of Religions.*** A study of the methodology of the History of Religions, the nature of religious experience and specific categories of religious phenomena. Permission of instructor. 3 s.h. *Sullivan*

III. Theological Studies

Christian Theology

20. ***Types of Religious Philosophy.*** Basic historical orientation in religious thought, especially in Western Culture. 3 s.h. *Robinson*

32. ***Introduction to Christian Theology.*** The major themes of theology of the church. 3 s.h. *Cushman and Herzog*

102. ***Christian Apologetics and Modern World Views.*** A constructive approach to the Hebrew-Christian understanding of Creator and creature in the light of contemporary scientific knowledge. 3 s.h. *Robinson*

108. ***Major Trends in Contemporary Theology.*** A study of recent developments in theology, such as nonreligious theology, hermeneutic theology, and death of God theology, in the light of revelation and authority. 3 s.h. *Herzog*

110. ***This Life and the Age to Come.*** Christian eschatology and the meaning of history in the light of God's triumph over sin, suffering, and death. 3 s.h. *Robinson*

*125. ***Theological and Psychological Interpretations of Man.*** An inquiry into the relations of theological and psychological views of man's nature, predicament, and deliverance. 3 s.h. *Richey*

127. ***Contemporary Understandings of Man.*** A seminar on selected recent and current interpretations of human nature and the human situation. 3 s.h. *Richey*

200. ***The Person and Work of Christ.*** The problem of knowledge of Christ and formulation of a doctrine of his work and person in the light of Biblical eschatology. Prerequisite: C.T. 32. 3 s.h. *Cushman or Hall*

213. ***The Structure of Roman Catholic Thought.*** The main characteristics of Roman Catholic theology with consideration of possibilities and limitations in ecumenical conversation with Rome. Prerequisites: C.H. 13 and 14 or H.T. 21. 2 s.h. *Herzog*

216. ***Kierkegaard Studies.*** Critical examination of selected works. Prerequisite: C.T. 32 or permission of the instructor. 3 s.h. *Robinson*

224. ***Conceptions of Man in Western Thought.*** An analysis and interpretation of important types of philosophical and theological theory. 3 s.h. *Richey*

300. ***Systematic Theology.*** Method and structure of systematic theology, the doctrine of God, theological anthropology and Christology. Prerequisite: C.T. 32 or equivalent. 3 s.h. *Herzog*

303. ***The New Hermeneutic and the Concept of History.*** A critical examination of key issues in present-day European systematic theology centered in the positions of Fuchs, Ebeling, Moltmann, Ott, and Pannenberg. Prerequisite: C.T. 32. 3 s.h. *Herzog*

320. ***Hegel and Schleiermacher.*** A study of two makers of modern Protestant thought. 3 s.h. *Herzog*

322. ***Nineteenth-Century European Theology.*** Protestant theology from Kant to Herrmann. 3 s.h. *Herzog*

325. ***Philosophical Theology I.*** Main problems in the history of philosophical theology from the pre-Socratics to Descartes. Prerequisite: C.T. 32. 3 s.h. *Robinson*

*May be taken and grade recorded as Christian Educ. 125.

326. ***Philosophical Theology II.*** Main problems of philosophical theology in the modern period. Prerequisite: C.T. 325. 3 s.h. *Robinson*

328. ***Twentieth-Century European Theology.*** Critical examination of the thought of selected Protestant theologians from 1900 to 1950. Prerequisite: C.T. 32 and permission of the instructor. 3 s.h. *Herzog*

Christianity and Culture

16. ***Contemporary Western Culture.*** An analysis of the conceptual commitments in contemporary styles of thought and life as reflected in the natural sciences, philosophy, social analysis, and the arts. 3 s.h. *Poteat*

80. ***The Christian Faith and Tragedy.*** An exploration of the tragic view of life as exhibited in selected classic and contemporary works of literature and a comparison of this with Christian belief. 3 s.h. *Poteat*

81. ***Recent and Contemporary Art and Theology.*** The study of 19th and 20th century painting and sculpture as documents of contemporary man's apprehension of himself and his world; and as elements in the conversation between Christian faith and culture. 3 s.h. *Poteat*

230. ***The Meaning of Religious Language.*** An analysis of the credentials of some typical claims of theism in the light of theories of meaning in recent thought. Prerequisite: C.T. 32 or permission of instructor. 3 s.h. *Poteat*

231. ***Seminar in Christianity and Contemporary Thought.*** Analytical reading and discussion of such critical cultural analysis as is found in the works of M. Polanyi, Arendt, Trilling, and others, with appraisal of the relevance for theological inquiry. Prerequisite: C.T. 32 or permission of instructor. 3 s.h. *Poteat*

380. ***Existentialist Thought.*** An analysis of writings of representative thinkers from Kierkegaard to Sartre. Prerequisite: C.T. 32 or permission of instructor. 3 s.h. *Poteat*

381. ***Seminar: Phenomenology and Religion.*** Analytical reading and discussion of works by Scheler, E. Straus, Merleau-Ponty, Ricoeur, Binswanger or others to show their bearing upon religious knowledge and practice. Permission of the instructor. 3 s.h. *Poteat*

Christian Ethics

27. ***Christian Ethics.*** The central assumptions and principles of the Christian conception of the good life. 3 s.h. *Beach and H. Smith*

114. ***Christian Social Ethics.*** The principles of Christian social policy with reference to domestic, social, political, and economic patterns of contemporary culture. 3 s.h. *Smith*

115. ***Christian Social Action in the Local Church.*** Christian ethical principles, resources, procedures, and programs for pastoral leadership in parish social action. 2 s.h. *Smith*

122. ***Moral Theology in the Nineteenth Century.*** Critical and comparative examination of ethical theory as exhibited in the work of representative theologians. 3 s.h. *Smith*

124. ***Moral Theology in the Twentieth Century.*** Critical and comparative examination of ethical theory as exhibited in the work of selected contemporary theologians. 3 s.h. *Smith*

175. ***Special Problems in Christian Ethics.*** A seminar for advanced students in special settings. A. Community Centers; B. Government and Politics; C. Business and Industry; D. Medicine. (These are separate courses, usually offered in different semesters.) 3 s.h. *H. Smith and others*

190. ***The Christian Critique of Communism.*** Analysis of and alternatives to the dynamic secular ideology from a religious standpoint. 3 s.h. *Lacy*

194. ***The Protestant Church and American Culture.*** Analysis from the perspective of Christian ethics of current problems in the interpenetration of Church and culture with explicit reference to the parish setting. 3 s.h. *H. Smith*

292. ***Christian Ethics and International Relations.*** An examination of Christian attitudes toward such issues as war and peace, the rule of law, foreign aid, and human rights; and the Church's contribution to international policies and institutions. 3 s.h. *Lacy*

333. ***Seminar: Marxist Ideology and Christian Faith.*** Comparative study of Communist and Christian doctrines of man, society, sin, history, ethics, and eschatology. Prerequisite: Ch.E. 190 or equivalent. 3 s.h. *Lacy*

389. ***Christian Ethics and Contemporary Culture.*** A study of the interaction between Christian thought and current secular social theory. Prerequisite: C.E. 27 or its equivalent. 3 s.h. *Beach*

390. ***Current Problems in Christian Ethical Theory.*** A critical study of dominant issues in Christian Ethics, through an analysis of contemporary Christian treatments of such problems as love, justice, community, and conscience. Prerequisite: Ch.E. 27 or its equivalent. 3 s.h. *Beach*

391. ***Historical Types of Christian Ethics I.*** A critical study of representative statements of Christian ethical theory, through the early Reformation. Prerequisite: Ch.E. 27 or its equivalent. 3 s.h. *Beach*

392. ***Historical Types of Christian Ethics II.*** A continuation of Ch.E. 391, from the Reformation through current Christian ethical theory. 3 s.h. *Beach*

394. ***Christianity and the State.*** The relation of the Christian theory of the State to political problems with special consideration of the religious assumptions underlying democratic theory and practice, and of the relationship of Church to State. Prerequisite: Ch.E. 27. 3 s.h. *Beach*

IV. Ministerial Studies

The Care of the Parish

146. ***Church Building.*** The role of the pastor in planning and executing building programs in the local church: architectural considerations and counsel, building requirements and plans. 2 s.h. *Nesbitt*

147. ***Sociological Factors in American Religious Expression.*** A study of cultural influences on religious expression as illustrated by the temperance movement, industrialization, New Thought, 20th century revivalism, ecumenism, the leisure revolution and other social phenomena. 3 s.h. *Schores*

148. ***Christian Stewardship and Church Finance.*** A seminar to consider the principles of stewardship education, budget making, enlistment in church support. 2 s.h. *Ingram*

150. ***Church and Community.*** The structure and dynamic factors shaping the present-day community together with their import for the work of the Church. 2 s.h. *Schores*

151. ***The Town and Country Church.*** The small church, the circuit church, circuit administration, larger parish and group ministry, and the Town and Country movement. 2 s.h. *Nesbitt*

152. ***Evangelism and the Local Church.*** A study of the nature, purposes and methods of contemporary Christian evangelism with special attention to the local church. 2 s.h. *Kale and Ingram*

153. ***Comparative Polity and Ecumenics.*** A study of selected examples of church polity as represented in the Catholic and Protestant traditions in relation to present-day ecumenical developments. 3 s.h. *Ingram*

154. ***The Urban Church.*** The function, nature, program, and administration of the effective city church and of the urban minister's distinctive task. 2 s.h. *Ingram and Schores*

155 A, B, C, D. ***Church Organization and Administration.*** Church structure and organization with consideration of administrative procedures appropriate for the local church. (Students may take the first two-thirds of the course, thus meeting denominational requirements for polity, in which case they will receive 2 s.h.)

A. ***The Methodist Church.*** 2 or 3 s.h. *Ingram*

B. ***The Baptist Churches.*** 2 or 3 s.h. *Ingram and Others*

C. ***The United Church of Christ.*** 2 or 3 s.h. *Ingram and Others*

D. ***The Presbyterian Churches.*** 2 or 3 s.h. *Ingram and Others*

157. ***Research and Survey for the Parish Minister.*** An introduction to basic forms of sociological research as applied to the local church: self-evaluations, religious census, opinion polls, community surveys, use of secular resources and agencies. Field and laboratory methods will be explored through involvement in a research project. 2 s.h. *Schores*

Christian Education

22. ***Faith and Nurture.*** Foundations in theology and educational theory for the teaching ministry of the Christian community. 3 s.h. *Richey*

25. ***The Church and Christian Nurture.*** A constructive survey of the local church as a community of Christian nurture: Statement and evaluation of objectives, leadership and resource materials, structural patterns and administrative and supervisory procedures for the church school. 2 s.h. *Kale*

125. ***Theological and Psychological Interpretations of Man.*** (See C.T. 125)

126. ***Missionary Education in the Local Church.*** Practical programs for church school, audio-visual aids, preaching, stewardship, and special projects. 2 s.h. *Lacy and Others*

149. ***The Ministry to the Campus.*** An examination of the circumstances which have produced, and the unique problems which confront, the ministry on the campus, considered from the perspective of the Christian idea of higher education. 3 s.h. *Staff*

161. ***Teaching Methods.*** Basic teaching procedures required by professional and lay workers in the local church. Opportunities are arranged for observation and guided practice in church schools, and/or other institutions. Required for candidates for the M.R.E. degree. 3 s.h. *Kale*

162. ***Curriculum Building in the Local Church.*** An examination of influential theories of and contemporary trends in curriculum construction, together with an evaluation of existing curricula. Actual designing of short units for use in the local church. 3 s.h. *Kale*

164. ***Christian Education of Children.*** The organization and administration of the work of the church with pre-school and elementary-age children. 2 s.h. *Kale*

165. ***Christian Education of Youth.*** The organization and administration of the youth program in the local church. 2 s.h. *Kale*

166. ***Christian Education of Adults.*** A study of the needs of adults; the materials, methods, and principles of organization for the Christian education of adults. 2 s.h. *Kale*

167. ***Theology and the Laity.*** A study of contemporary lay movements and centers, the ministry and mission of the laity in Church and world, and the ministry of teaching in the lay renewal of the Church. 3 s.h. *Richey*

169. ***Major Issues in Christian Education.*** Critical examination of selected issues in Christian education. 3 s.h. *Richey*

M.R.E. Thesis or Project. Required of all candidates for the Master of Religious Education degree. 3 s.h. *Kale and others*

Pastoral Psychology

170. ***Pastoral Conversation.*** A consideration of the nature of the pastor's conversation with people in his total caring ministry grounded in the person-centered understanding of personality processes and human relationships, using textual and conversational materials. 3 s.h. *Goodling*

171. ***Pastoral Counseling.*** Consideration of the structures and processes of pastoral counseling: pastoral evaluation, referral, intake, contract, goals, transference, termination, and other special problems. Prerequisite: P.P. 177. 3 s.h. *Williamson*

172. ***Pastoral Care in Marriage and Family Life.*** Pastoral care in marriage and family life with special emphasis on premarital guidance within the context of the local church's program of family life education. 2 s.h. *Goodling*

174. ***Religion and Personality Processes.*** Psychological and religious interpretation of man's basic experiences; personality factors in religious development; psychodynamic meanings and uses of religious beliefs and practices. Prerequisite: P.P. 177. 3 s.h. *Goodling or Williamson*

175. ***Special Practicum Projects.*** For advanced students who want additional clinical experience under supervision in a Pastoral Care setting (inner-city; alcoholic rehabilitation; counseling; etc.) *Goodling or Williamson*

176. A, B. ***Pastoral Care and Persons in Institutions.***

A: Lectures by staff and ward visits at the Dorothea Dix State Hospital in Raleigh (and related facilities: Central Prison, Alcoholic Rehabilitation). 3 s.h. *Staff*

B: Lectures by staff and ward visits at the Murdoch Center for the Mentally Retarded and other facilities in the Butner, North Carolina complex (State Hospital, Alcoholic Rehabilitation, Training School). 3 s.h. *Staff*

177. ***Introduction to Clinical Pastoral Education.*** An examination, through intensive individual and group supervision, of the student's pastoral ministry to the ill, the dying and the bereaved in the general hospital setting. Prerequisite: P.P. 170. 3 s.h. *Staff*

178. ***The Psychodynamics of the Community Life of the Local Church.*** A case study approach to the organizational functioning and life style of the local church community. Admission by consent of the instructor. 2 s.h. *Williamson*

271. ***Advanced Counseling: Marriage and Family.*** The psychodynamics of marital conflict and family problems; principles and procedures in marriage and family counseling. (For Th.M. candidates.) 2 s.h. *Williamson*

274. ***Research Problems in Pastoral Psychology.*** Research methods and areas of investigation in Pastoral Psychology. 2 s.h. *Goodling*

275. ***Individual Study in Pastoral Psychology.*** Selected readings in major issues in Pastoral Psychology issuing in a research or honors paper. 2 s.h. *Staff*

276 A, B, C. ***Clinical Pastoral Education I:*** CPE in the State Hospital Setting.

A: Summer Quarter of CPE. 4 s.h.

B: Fall Quarter of CPE. 4 s.h.

C: Spring Quarter of CPE. 4 s.h.

277 A, B, C. ***Clinical Pastoral Education II:*** CPE in the General Hospital Setting.

A: Summer Quarter of CPE. 4 s.h.

B: Fall Quarter of CPE. 4 s.h.

C: Spring Quarter of CPE. 4 s.h.

278. ***Psychological Theories of Personality.*** Systematic review of personality theories (Psychoanalytic, Social Psychological, Organismic, Existential Self-Theory) with special reference to their relevance for the pastoral ministry. 2 s.h. *Williamson*

279. ***The Caring Ministry of the Laity Through Personal Groups.*** Personal experience in a group counseling process to develop a methodology for training lay leadership in the ministry of pastoral care through group experience. 2 s.h. *Williamson*

281 A, B. ***Pastoral Counseling Practicum.*** Individual and group supervision of several types of pastoral counseling with people in different crisis and growth situations. The student will be working part-time as a minister of counseling in a local church situation. Admission by permission of instructor. 4 s.h. *Goodling and Williamson*

The Church at Worship

34. ***Workshop in Communication.*** Intensive drill in voice, diction, speaking and reading. Enrollment by recommendation of teaching faculty. 1 s.h. *Rudin*

Preaching

30. ***Theory and Practice of Preaching.*** The development of a theory of preaching and methods of sermon construction, including clinical experience in preaching sessions and local church settings. 3 s.h. *Hall*

181. ***Advanced Sermon Analysis Seminar.*** A critical study, on the basis of selected sermons and student presentations, of principal and practical problems facing the contemporary preacher. 3 s.h. *Hall*

185. ***Preaching Values in Non-Biblical Sources.*** A critical examination of select samples of contemporary drama, poetry, and fiction, for homiletical purposes. 3 s.h. *Hall and Staff*

187. ***Pre-Reformation Preaching.*** Sermons, handbooks, and other historical sources studied in relation to Biblical preaching and the liturgical

church, the problem of popular ministry and the issues of Christian reform. Prerequisite: C.H. 13. 2 s.h. *Petry*

193. ***Theology and Preaching.*** An examination of the relation of systematic theology and homiletical presentation in the sermons of major Christian leaders, past and present. 3 s.h. *Hall*

Worship and Church Music

134. ***Liturgical Reading.*** Practice in reading the liturgical materials of the pastoral ministry: Scriptures, prayers, and the rites and services in the Methodist *Book of Worship.* 2 s.h. *Rudin*

141. ***The Classic Age of the English Hymn.*** Eighteenth century development of the English hymn with special reference to Watts and the Wesleys, their precursors and successors. 2 s.h. *Baker*

178. ***Corporate Worship.*** Study of the liturgical life of the church, celebrated in sacraments, worship, and the church year. Field experiences and vocational application of theory. 3 s.h. *Rudin*

180. ***Church Music.*** A two-fold study including: (1) a survey of the great monuments of church music; (2) musicianship, songleading and basic conducting; with an emphasis upon the use of the hymn tunes and other music in the Methodist hymnal. 3 s.h. *Hanks*

Chapel Choir. Students who successfully complete C.W. 180 before graduation may qualify for credit (to the limit of 2 s.h.) of ½ s.h. for each semester of effective participation in the Chapel Choir. Choir membership (granted by audition) affords opportunity for study of the history and background of church music, and practical consideration of it in the context of public worship. *Hanks*

Field Education, Clinical Training, and Internships

Field Education

Each project involves the quality of preparation and participation commensurate with one semester hour of academic credit. Participation in any project must have the approval of the supervising professor and the Field Education Office before work is begun. Registration for projects must be at the time of normal Divinity School registration, though work on the project may extend over varying lengths of time. A student may receive credit for a maximum of three projects during his seminary career. Projects in other areas may be proposed by professors or students for consideration by the Field Education and Curriculum Committees.

195 A, B, C, D, E, F. ***Field Education Projects.***

A. ***Pastoral Psychology Practicum.*** Small group seminar to explore

personal and professional identity and role performance based on written reports of field encounters. Enrollment limited to students currently engaged in field work situations with separate seminars for student pastors and student assistants. 1 s.h. *Claytor and Staff*

B. ***Community Studies.*** Planning and execution of a community religious census, church and community survey, or field research study in consultation with the faculty supervisor. Includes background reading, planning sessions, use of volunteer help where needed, tabulation, interpretation, and overall evaluation. 1 s.h. *Schores and Staff*

C. ***Leadership Training.*** Preparation, teaching, and evaluation of a leadership training course under faculty supervision in collaboration with denominational boards of education. Can be taught in any field location approved by faculty supervisor. 1 s.h. *Kale and Staff*

D. ***Christian Education Laboratory.*** Controlled educational experience in a local church setting, under supervision, approximating 28-32 hours of participation in planning, leading, observing, and evaluating actual teaching-learning projects related to specific age groups. 1 s.h. *Kale and Staff*

E. ***Research in Experimental Ministries.*** Assembling data and preparing papers for the guidance of the four committees of the Triangle Interchurch Task Force: Committees on Planning, Politics, Technology, and Church Resources. 1 s.h. *Ingram and Staff*

F. ***Community Center Practicum.*** Seminar to assist students to integrate work and learning experiences in a community center and to develop a vocational style which displays special relevance for ministry in an inner-city neighborhood. Enrollment limited to those currently engaged in community center experiences. 1 s.h. *H. Smith and Staff*

Clinical Training in Pastoral Psychology

1. Clinical credit may be allowed to students for a quarter (10 or 12 weeks) of training in programs accredited by the Association for Clinical Pastoral Education (ACPE).

2. Credit for clinical training in programs not accredited by ACPE will be on an individual basis only upon the recommendation of the Director of Studies in Pastoral Care and approval of the Dean.

3. Students involved in clinical training under the direct supervision of members of the Pastoral Psychology staff shall register for credit under PP 277A for 4 semester hours of credit.

4. Students involved in clinical training in other programs shall register with the ACPE and upon receipt of a supervisor's report at the end of the training period will receive 4 s.h. of transfer credit.

5. Grades for clinical training are to be reported as either "P" or "F".

Interseminary Church and Society Internships

The Interseminary Church and Society Program is an experiment in the theological education of students, professors, and leaders in some of the major institutions of our time. Sponsored jointly by Duke Divinity School, Union Theological Seminary in Virginia, and Virginia Theological Seminary, the Program currently permits students to enroll for an academic year in residence at one of the participating schools and to undertake work and study in business and industry, government and politics, or science and technology. Major features of the program include specific job placement, professional and academic supervision, and regular seminars and colloquia. For further information concerning this Program, consult the Registrar.

Ch.E. 175. See *Christian Ethics,* Courses of Instruction, page 65.

Ch.E. 131-132. ***Interseminary Intern Seminar.*** Development and personal projection of a style of special ministry through understanding, appreciation, involvement in and critical reflection upon environment, structures, values, and decision-making processes in: (a) business and industry; (b) science and technology; (c) government and politics. 6 s.h. *H. Smith and others*

Campus Ministry Internships

143-144. ***Campus Ministry Internship.*** A nine- to twelve-month position in approved locations designed to provide professional experience, under qualified guidance, in ministering to college students. Academic seminars, a personal journal, directed readings, and evaluative reports will aid the intern in clarifying his vocational choice and professional identity as a campus minister. Open to students who have completed at least two full years of seminary and who seriously contemplate a ministry to the campus following graduation. Prerequisite: C.Ed. 149. 3 s.h. each semester. *Staff*

Degrees Conferred at Commencement, 1967

Bachelor of Divinity

Lawrence Clay Adams
Wayne Dee Arrowood
J. James Boles
Roy Vance Bolyard, Jr.
B. Dean Brown
Louie Bingham Cain, Jr.
Richard E. Campbell
William Thomas Clarke
Don Caudill Combs
Richard Lewis Cox
Creed Shelton Davis, Jr.
Dennis Roy Dickerson, Jr.
Howard Dennis Draper, Jr.
Charles Robert Franklin Echols
Edgar Heb Ellis, Jr.
Raymond Morrison Fearnow
Samipeni Finau
Carlos Owen Gardner, Jr.
Edward Mann Garrett, Jr.
James Ellis Griffeth
Randolph Jennings Griffith
Elliot Wannamaker Hardin, Jr.
James Franklin Herman
Richard Carrington Holliday
Larnie Glenn Horton
Warren Fielding Huntington
Clifford Earl Hutton
Clarence Reginald Johnson
Royce Paul Jones
Charles Benjamin King
John A. Kirk
James C. Little
James Baxter Long, Jr.
Hubert Alexander Maddry, Jr.
William Kirk McNeill
Clay Johnson Morgan
William Robert Morris
Fred Clare Morton
William Michael Nobles
George Damon Nolin
Jimmy Jerry Norred
James Ralph Oliver
William Homer Osborne, Jr.
Barbee Olis Parsons
Fred Perry Pierce
George Lee Pollock
Louis Frederick Pomrenke, Jr.
Christopher Lee Poole, Jr.
Allen Lee Puffenberger
William Robbins Ragsdale
Thomas LeRoy Reynolds, Jr.
Jesse Jeremiah Sell
Homer Carlton Singleton, Jr.
Arnold Harry Skaar
Samuel M. Stone, IV
Roger Everett Thompson
Robert L. Tobing
Frankie L. Turnbow
Richard Paul Walters
Phillip S. Washburn
Dana Richard Wellman
Leighton Marion Wilson, Jr.
Sidney F. Wogan
Roger Wayne Wood
Lawrence Thomas Yeo

Master of Theology

Ronald Glen Brown
Foster Alvin Embry, Jr.
Thomas Jennings Goldston, Jr.
James Kyriakakis
Joseph Winston Lisenby
John Ruffin Manley
Robert Edward Manthey
Henry Elmon May, Jr.
Kenneth Wayne Mullis
Keith Parker
Lawrence Harold Stibbards

Master of Religious Education

Betty Sherryll Chance
Karen Renegar Wortman

Enrollment 1967-68

Candidates for the Master of Divinity Degree

Adams, James Carl (A.B., Coker College), Darlington, South Carolina
Adams, Larry Elliott (B.A., Millsaps College), Summit, Mississippi
Adams, Quay Wyatt (A.B., Wofford College), Elgin, South Carolina
Alexander, Charles Edward (A.B., Birmingham-Southern College), Birmingham, Alabama
Alger, Robert (B.A., Mount Union College), Aliquippa, Pennsylvania
Allred, James Grant, Jr. (A.B., Pfeiffer College), Albemarle, North Carolina
Arnold, Cecil Samuel, III (A.B., Wofford College), Darlington, South Carolina
Arthur, Charles Ralph, Jr. (B.A., Randolph-Macon College), Ferrum, Virginia
Bachtel, Forrest Dawson (B.A., Mount Union College), Middleport, Ohio
Bailey, Joseph David (A.B., Wofford College), Sumter, South Carolina
Barber, Morris Lee (B.A., Taylor University), Greensboro, North Carolina
Barker, Herbert James (B.A., Berry College), Marlow, Georgia
Barnes, Larry Allen (A.B., University of North Carolina), Fairmont, North Carolina
Beals, Emily Jarrett (B.S., Florida State University), Miami, Florida
Bensinger, John Carl (B.A., Wesleyan University), Princeton, New Jersey
Blackwell, Robert Lindsay (B.S., Southwestern University), Corpus Christi, Texas
Blankenship, Rupert J. (A.B., M.A., Bethany-Nazarene College), Bethany, Oklahoma
Bolen, William Elzie (A.B., University of North Carolina), Charlotte, North Carolina
Booth, Jeffrey Alan (B.S., Lamar State College of Technology; M.A., Stephen F. Austin State College), Orange, Texas
Bouldin, Wood, III (A.B., Washington and Lee University), St. Albans, West Virginia
Bragdon, Dannye Olin (A.B., Wofford College), Georgetown, South Carolina
Brenner, Robert Alan (A.B., Washington and Lee University), Macon, Georgia
Breytspraak, William August (B.A., Southwestern at Memphis), Memphis, Tennessee
Britt, William Donald (A.B., Wofford College), Marion, South Carolina
Brooks, James Mell, III (B.S., University of Tennessee), Memphis, Tennessee
Brown, Arthur Henry, III (B.A., William and Mary College), Lynchburg, Virginia
Browning, Ronald William (B.A., Hartwick College), Norwich, New York
Bugbee, William Warren (B.A., Allegheny College), McKeesport, Pennsylvania
Bullard, James Edward (A.B., Princeton University), Marietta, Georgia
Burgess, Stephen Webb (B.A., West Virginia Wesleyan College), Martinsville, Virginia

Burkett, Gail (B.A., Ohio Northern University), Fort Recovery, Ohio
Burrier, Judith Ann (A.B., High Point College), Charlotte, North Carolina
Buzzard, Lynn Robert (A.B., M.A.T., Duke University), Gladstone, Oregon
Camp, William Douglas (A.B., University of North Carolina), Greensboro, North Carolina
Cataline, Ronald Edward (A.B., Findlay College), Findlay, Ohio
Chamberlain, Ray Willis, Jr. (B.S., Th.B., Eastern Pilgrim College), Allentown, Pennsylvania
Chappell, Keith C. (A.B., Hope College), Saginaw Michigan.
Chesser, William Thad (B.S., Troy State College), Pensacola, Florida
Churchill, Larry Raymond (B.A., Southwestern-at-Memphis), Little Rock, Arkansas
Clark, James Lester (B.A., Florida State University), Hialeah, Florida
Climer, George William, Jr. (B.A., Tennessee Wesleyan College), Athens, Tennessee
Clodfelter, James Paul, Jr. (A.B., Pfeiffer College), Winston-Salem, North Carolina
Clodfelter, William Daniel (B.A., Western Carolina College), Thomasville, North Carolina
Cofield, Robert (B.A., Randolph-Macon College), Windsor, Virginia
Coile, James Henry (A.B., Atlantic Christian College), Lucama, North Carolina
Coltharp, John Cameron (B.A., Campbell College), Wilmington, North Carolina
Cook, Pierce Embree, Jr. (A.B., Wofford College), Columbia, South Carolina
Cook, Reece Edward, Jr. (B.A., Catawba College), Concord, North Carolina
Cottingham, John Gibson (B.A., Frederick College), Laurinburg, North Carolina
Cox, Abram Jones (A.B., Duke University), Asheboro, North Carolina
Cox, Roy David (A.B., Davidson College), Asheboro, North Carolina
Coyle, Jimmy Glynn (B.A., Oklahoma City University), Marlow, Oklahoma
Crandall, Robert Steven (B.A., Simpson College), Ottumwa, Iowa
Creech, James Edward (A.B., University of North Carolina), Goldsboro, North Carolina
Creech, Roy Oren, Jr. (A.B., William and Mary College), South Boston, Virginia
Crutchfield, Charles Newton (B.A., Southern Methodist University), Tulsa, Oklahoma
Curry, Ben Willard (B.A., Emory University), Miami, Florida
Curry, Henry Lee, III (B.A., University of Virginia), Richmond, Virginia
Daly, John William Michael (B.A., MacMurray College), Chappaqua, New York
Daughtry, Rebecca Kay (B.A., North Carolina Wesleyan College), Dudley, North Carolina
Davis, Benjamin Franklin (B.A., University of North Carolina-Charlotte), Lawndale, North Carolina
Davis, Carlton Earl (B.S., North Carolina State College), Goldsboro, North Carolina
Davis, Donald Douglas (A.B., Davidson College), Waynesville, North Carolina
Dell, Gregory Robert (B.A., Illinois Wesleyan University), Midlothian, Illinois
Dial, Donald Nelson (B.A., Florida Southern College), Lakeland, Florida
Dowdy, Melvin (B.A., North Carolina Wesleyan College), Richmond, Virginia
Duncan, Thomas Jefferson, Jr. (A.B., Greensboro College), Lexington, North Carolina
Dunn, Robert Neil (A.B., Hamline University), Minnesota Lake, Minnesota
Durbin, Jack Dale (A.B., Florida Southern College), Orlando, Florida
Durbin, Linda Miner (B.A., Scarritt College), St. Petersburg, Florida
Early, Jean Hartz (A.B., Southern Methodist University), Clinton, Missouri
Early, John Firman (B.A., Rice University; M.A., University of Wisconsin), Sioux Falls, South Dakota
Edge, Gerald Lloyd (A.B., Pfeiffer College), Fayetteville, North Carolina
Elliott, Roger Vernon (B.A., Campbell College), Tabor City, North Carolina
Fast, Jay Howard (A.B., West Virginia University), Durham, North Carolina

Ferguson, Horace Taylor (A.B., Atlantic Christian College), Pleasant Hill, North Carolina
Ferree, John Koonts (B.A., Vanderbilt University), Nashville, Tennessee
Fields, Glenn Dixon, Jr. (A.B., Duke University), Annandale, Virginia
Ford, Robert (A.B., Baker University), Baldwin City, Kansas
Fowler, William Joseph (B.A., Peabody College for Teachers; M.A., University of Tennessee), Clinton, Tennessee
Freeman, Howard J. (B.A., Morningside College), London, England
Freeman, James Herbert (A.B., Wofford College), Blenheim, South Carolina
Garner, Clarence (B.A., Guilford College), Milton, North Carolina
Gattis, William Hughes (B.S., University of North Carolina), Bynum, North Carolina
Gilbert, Milton Heath (B.A., Adrian College), Ludington, Michigan
Goldfinch, Albert Eugene, Jr. (B.A., Wheaton College), Raleigh, North Carolina
Green, Henry Sterling (B.A., Western Maryland College), Crisfield, Maryland
Grice, Franklin Wilson (A.B., High Point College), Stanley, North Carolina
Grigsby, Robert Lee (B.A., Birmingham-Southern College), Birmingham, Alabama
Hale, Toby Albert (B.A., Wake Forest University), Kingsport, Tennessee
Hall, Andrew M., Jr. (B.A., Hendrix College), North Little Rock, Arkansas
Hall, Ronald Lavon (A.B., Stetson University), Durham, North Carolina
Hamilton, Robert (A.B., High Point College), Wareham, Massachusetts
Hannah, Harry Conclave, III (B.A., Ohio Wesleyan University), Atlanta, Georgia
Harris, Roy VanIngen (A.B., Florida Southern College), Orlando, Florida
Hartley, Tommy (B.A., Millsaps College), Jackson, Mississippi
Heathcock, J. Edwin (B.S., Central Michigan University), Ithaca, Michigan
Heitzenrater, Wilson Drew (A.B., Duke University), Grove City, Pennsylvania
Herin, Thomas James (A.B., Duke University), Miami, Florida
Herndon, Bayard Preston (B.S., Ohio University), Tecumseh, Michigan
Herndon, Joyce Davis (B.A., William Jewell College), Independence, Missouri
Holtsclaw, Thomas (B.A., Morris Harvey College), Charleston, West Virginia
Horner, John Scott (B.S., Virginia Military Institute), Richmond, Virginia
Hoskins, Jerry Don (B.A., Florida State University), Ontario, California
Houser, Ervin Hillard (A.B., High Point College), Kings Mountain, North Carolina
Hudson, Blaine Steven (A.B., University of North Carolina), Hendersonville, North Carolina
Humphries, Charles Rayford, Jr. (A.B., Wofford College), Union, South Carolina
Inabinet, Charles Reed (A.B., University of South Carolina), Woodford, South Carolina
Ingram, Franklin Wade (A.B., Duke University), Durham, North Carolina
James, Conrad Randal (B.A., Centenary College of Louisiana), Shreveport, Louisiana
Jaquette, John Paul, Jr. (B.A., Ohio Wesleyan University), Newark, Delaware
Jessee, Durward Douglas (B.A., Berea College), North Tazewell, Virginia
Johns, Elbert, Jr. (B.A., Lambuth College), Paducah, Kentucky
Johnson, Robert Franklin (A.B., University of Alabama), Jemison, Alabama
Johnson, Sidney Thomas (B.A., North Carolina State University), Morrisville, North Carolina
*Joines, Vann Sylvanus, Jr. (B.S., North Carolina State University), Reidsville, North Carolina
Jordan, Nerius Fred, Jr. (A.B., Catawba College), Salisbury, North Carolina
Judy, Karl Wesley (A.B., Pfeiffer College), Raleigh, North Carolina
Juren, Jerry Jay (A.B., Atlantic Christian College), Durham, North Carolina
Kallmyer, Jack Robinson (B.A., Wheaton College), Tallmadge, Ohio
Kerr, Robert Lowell (A.B., Florida Southern College), Miami, Florida
Kim, Kwan-Lyun (B.D., Seoul Methodist Seminary), Seoul, Korea

*Interseminary Church and Society Intern.

Kimel, Larry (A.B., University of North Carolina), Winston-Salem, North Carolina
Kwapong, Daniel Ofei (B.A., University of Ghana), Akropong, Akuapem, Ghana
LaTorre, Stanley Edward (B.S., The College of Charleston), Charleston, South Carolina
Lawrence, Happy James (A.B., Pfeiffer College), New Smyrna Beach, Florida
Leatherwood, James Michael (B.S., North Carolina State University), Clyde, North Carolina
Leeds, Robert Shannon (B.A., Pennsylvania State University), Harrisburg, Pennsylvania
Leifeste, Dane Irving (B.A., University of Southern Florida), St. Petersburg, Florida
Leonard, David (B.S., Florida Southern College), Fort Myers, Florida
Lewis, Edward Lee (A.B., University of North Carolina), High Point, North Carolina
*Little, Thomas C. (A.B., King College), Dayton, Tennessee
**Lotspeich, Edgar Sevier (A.B., Duke University), Cincinnati, Ohio
Lovelace, Henry Neal (B.A., Hendrix College), Townsville, North Carolina
McCleery, Richard Frederick (B.A., The American University), East Aurora, New York
McColgan, Edgar Bornman (B.A., Southwestern at Memphis), Pine Bluff, Arkansas
McConathy, Robert Robin (B.A., Southwestern University), Beaumont, Texas
McLeod, Lionel Powers, Jr. (A.B., Emory University), Montgomery, Alabama
McMillan, John Samuel (A.B., University of North Carolina), Coats, North Carolina
McMullen, John Henry (B.A., Southwestern University), Weslaco, Texas
McMurry, Joseph Crowell (B.S., Appalachian University), Belwood, North Carolina
Mahla, Frederick Tice (A.B., Duke University), Wilmington, Delaware
Mann, John Martin (B.A., Clarion State College), Irwin, Pennsylvania
Martin, Richard Merle (A.B., Birmingham-Southern College), Birmingham, Alabama
Martin, Russell Earl (A.B., Baldwin-Wallace College), East Cleveland, Ohio
Meadows, Robert Dean (B.A., Berea College), London, Kentucky
Miller, John Teague (A.B., Wofford College), Greenwood, South Carolina
Montague, Martha Wray (A.B., Duke University), Jacksonville, Florida
Moore, Jerry Wayne (A.B., Elon College), Burlington, North Carolina
Moore, Stephen R. (B.S., University of Wisconsin), Flossmoor, Illinois
Morris, Jerry McArthur (B.A., Huntington College), Pensacola, Florida
Mullen, William Doverspike (B.S., University of North Carolina), Tampa, Florida
Murray, Louis H. (A.B., Greensboro College), Salisbury, North Carolina
Newman, Harvey Knupp (A.B., Davidson College), Buies Creek, North Carolina
Newman, William Winter (B.S., University of North Carolina), Burlington, North Carolina
Nickolaus, John Maurice (A.B., Pfeiffer College), Whiteville, North Carolina
Norton, James Earle (A.B., West Liberty State College), Wheeling, West Virginia
Omansiek, William Walter (A.B., University of Michigan), Mt. Clemens, Michigan
Osborne, Barry Phillip (A.B.T., High Point College), Asheboro, North Carolina
Pacholke, David Alan (B.A., Morningside College), North English, Iowa
Peel, John Jay, Jr. (B.A., North Texas State University), Denton, Texas
Peery, Nettie DuBose (A.B., King College), Tazewell, Virginia
Perry, Nelson Neal (B.S., Western Carolina University), Charlotte, North Carolina
Peters, David Russel (B.A., West Virginia Wesleyan), Glenside, Pennsylvania
Peterson, Charles Morgan (B.A., West Virginia Wesleyan College), Waynesboro, Virginia
Pettit, DuBois Morton (B.S., Arkansas State University), Jonesboro, Arkansas
Pettyjohn, Walker (B.A., Lynchburg College), Lynchburg, Virginia
Phillips, Lewis Gregory (B.A., Randolph-Macon College), Norfolk, Virginia

*Campus Ministry Intern, Virginia Polytechnic Institute, 1967-68.
**Interseminary Church and Society Intern.

Poag, Lewis Lowe (B.A., Florida State University), Tallahassee, Florida
Powell, James Lee (A.B., Duke University, Sylva, North Carolina
Rankin, Donald Erwin (A.B., Kentucky Wesleyan College), Erlanger, Kentucky
*Ransford, Paul Jr. (B.A., Hope College), Raleigh, North Carolina
Richards, Richard Porter (B.A., Hiram College), Monroeville, Pennsylvania
Richardson, Nancy Dale (B.A., University of Richmond), Roanoke, Virginia
Rink, James Michael (B.A., Adrian College), Adrian, Michigan
Rintamaa, Richard (B.A., Hiram College), Cincinnati, Ohio
Robertson, Stanley Joe (B.A., Alma College), Grayling, Michigan
Roe, James Edward (B.S., Bradley University), Peoria, Illinois
Rouse, Graham Manly, Jr. (B.A., East Carolina University), Havelock, North Carolina
Rush, Dallas Miller (B.S., Greenville College), Trinity, North Carolina
Rutland, John Edward (A.B., Birmingham-Southern College), Tuscaloosa, Alabama
Sagar, Harry Andrew, III (A.B., The American University), Mansfield, Pennsylvania
Sawyer, Lloyd Alfonza (B.A., North Carolina College), Roper, North Carolina
Schuster, John Charles (A.B., West Virginia University), Morgantown, West Virginia
Scrimsher, Sheryl Lou (B.A., Nebraska Wesleyan University), Grainton, Nebraska
Seely, Donald Hubbard (B.A., University of Richmond), Richmond, Virginia
Shackelford, Jerry Wayne (A.B., Pfeiffer College), Winston-Salem, North Carolina
Sheridan, Rutledge Dantzler, Jr., (A.B., Wofford College), Spartanburg, South Carolina
Shields, Jerry Kermit (A.B., Marshall University), Huntington, West Virginia
Smalling, William Arthur (B.A., Tennessee Wesleyan College), Durham, North Carolina
Stanley, Harold Dallas (B.A., North Carolina Wesleyan College), Roxboro, North Carolina
Stinson, James Riley (B.A., Michigan State University), Lincoln Park, Michigan
Stokes, Clarence O'Dell (A.B., St. Andrews Presbyterian College), Camden, South Carolina
Stokes, James C., Jr. (A.B.; LL.B., Duke University), Asheboro, North Carolina
Sykes, Leo Ernest Cornelius (B.A., Bethune-Cookman College), Arlington, Georgia
Teague, Willie Senn (A.B., Wofford College), Whitmire, South Carolina
Thomas, John Hurley, III (A.B., University of North Carolina), Monroe, North Carolina
Thompson, David Clark (B.A., Florida State University), Lakeland, Florida
Thompson, George Edward (A.B., Pfeiffer College), Forest City, North Carolina
Thompson, Henry Churchill (A.B., High Point College), Graham, North Carolina
Tise, Larry Edward (A.B., Duke University), Winston-Salem, North Carolina
To'a, Sione (L.Th., Leigh College, Sidney), Sia'a Toutai, Nuthualofe, Tonga
Troll, Fredric Harold (B.A., University of Richmond), Mansfield, Ohio
Trollinger, James Thomas (A.B., Guilford College), Asheboro, North Carolina
Tyson, Carson Stanley (B.A., North Carolina Wesleyan College), Durham, North Carolina
Van Tassel, Linda Vera (B.A., Drew University), Saugerties, New York
Wade, David Lee (B.A., Randolph-Macon College), Arlington, Virginia
Wade, Zoe Lee (B.A., Shorter College), Crystal River, Florida
Walker, Alan John (B.A., Lee College), Indianola, Mississippi
Walker, Richard Keith, II (B.A., Florida State University), Orlando, Florida
Wallace, Harold Gene (B.S., Claflin College), Gaffney, South Carolina
Wallace, John Wesley (B.A., Morningside College), Boise, Idaho
Watson, Henry Douglas (B.A., Emory and Henry College), Stem, North Carolina
Weisner, Billy Julian (B.A., Presbyterian College), Piedmont, South Carolina

*Interseminary Church and Society Intern.

Welch, Rock Elliott (A.B., Oberlin College), Seabrook, Texas
Westbrook, Hugh Ashley (A.B., Emory University), Jacksonville, Florida
Wheatley, Frederick Edward, Jr., (A.B., Marshall University), Huntington, West Virginia
White, Charles Denny (A.B., Duke University), Gastonia, North Carolina
Whittington, John Hewitt (B.A., Millsaps College), Summit, Mississippi
Wicker, Leslie Cleveland (A.B., Greensboro College), Durham, North Carolina
Wiggins, Carson Olin (B.A., Lee College), Gastonia, North Carolina
Wilder, John William (B.A., Huntington College), Tallassee, Alabama
Wilkes, Rex Benjamin (B.A., Centenary College), Shreveport, Louisiana
Williams, John Eldred (B.A., North Carolina Wesleyan College), Rocky Mount, North Carolina
Williams, Joseph Louis (A.B., Asbury College), Asheville, North Carolina
Wilson, John Christian (A.B., Duke University), Winston-Salem, North Carolina
Wise, Denny Claude (B.A., North Carolina Wesleyan College), Manteo, North Carolina
Wiygul, James Hershel (B.A., Mississippi State University), Nettleton, Mississippi
Wohlwend, Peter Michael (B.A., Tennessee Wesleyan College), Rogersville, Tennessee
Wolfe, William Lee (B.A., West Virginia Wesleyan University), Graham, North Carolina
Woodruff, Charles Edwin, Jr. (A.B., High Point College), Roanoke Rapids, North Carolina
Woods, Freddie Kennard (B.A., St. Augustine's College), Houston, Texas
Worthy, Carl McGhee, Jr. (A.B., High Point College), Charlotte, North Carolina
Young, John Kenneth (B.A., Lincoln Memorial University), Coeburn. Virginia
Yow, Thomas Sidney (B.A., Methodist College), Garner, North Carolina

Candidates for the Master of Theology Degree

Adams, Lawrence Clay (A.B., Pfeiffer College; B.D., Duke University), Asheville, North Carolina
Aldridge, Julian McClees, Jr., (A.B., Davidson College; B.D., Duke University), Rocky Mount, North Carolina
Askins, William Franklin (A.B., University of South Carolina; B.D., Southern Baptist Theological Seminary), Butner, North Carolina
Bedingfield, Robert William (B.A., Hope College; B.D., New Brunswick Seminary), New York, New York
Bolyard, Roy Vance, Jr. (B.A., West Virginia Wesleyan University; B.D., Duke University), Charleston, West Virginia
Bourn, Thomas Carroll (B.A., Mississippi College; B.D., New Orleans Seminary), Jackson, Mississippi
Bowyer, Orman Richard (A.B., Marshall University; B.D., Duke University), Fairmont, West Virginia
Buckley, James Clement (S.T.L., Athenaeum Angelicum; M.A., University of Notre Dame), Notre Dame, Indiana
Cox, Richard Lewis (B.A., University of Maryland; B.D., Duke University), Towson, Maryland
Dowda, Robert Ellis (A.B., Birmingham-Southern College; B.D., Duke University), Birmingham, Alabama
Fleece, David Fox (B.A., Columbia Bible College; B.D., Covenant Theological Seminary), Durham, North Carolina

Fritz, Edmund William (B.A., Lincoln University; B.D., Concordia Theological Seminary), Greensboro, North Carolina
Hall, Elmer O. (A.B., High Point College; B.D., Duke University), Durham, North Carolina
Humphries, Levi Huffman (A.B., King College; B.D., Union Theological Seminary, Richmond), Sutton, West Virginia
McBride, John Thomas (A.B., Carson-Newman College; B.D., Southeastern Baptist Theological Seminary), Butner, North Carolina
Macon, Fred Keith (A.B., High Point College; Boston University School of Theology), Greensboro, North Carolina
Moore, Robert Louis (B. A., Hendrix College; B.D., Southern Methodist University), Lonoke, Arkansas
Mullen, David Edward (A.B., Davidson College; B.D., Union Theological Seminary, Richmond), Greensboro, North Carolina
Otte, Gregory Albert (B.A., Valparaiso University; B.D., Concordia Theological Seminary), Detroit, Michigan
Piirto, John Arthur (B.S., University of California; B.D., Lutheran School of Theology, Maywood), Buena Park, California
Stewart, Acie David (B.S., West Virginia Institute of Technology; B.D., Eastern Baptist Seminary), Pineville, West Virginia
Tansill, Charles Anthony (A.B., University of Tampa; B.D., Concordia Theological Seminary), Baltimore, Maryland
Thomas, Herman Edward (B.S., North Carolina Agricultural and Technical College; B.D., Duke University), Bryson City, North Carolina

Candidates for the Master of Religious Education Degree

Benfield, Mary Eunice (A.B., Pfeiffer College), Morganton, North Carolina
Dell, Jade Luerssen (B.A., Illinois Wesleyan University), Bloomington, Illinois
McLean, Jimette (B.A., McMurry College), Friona, Texas
Moore, Martha (A.B., Birmingham-Southern College), Durham, North Carolina
Norell, Judith (B.A., North Carolina Wesleyan College), Erie, Pennsylvania
Pearce, Ann Cameron (A.B., University of North Carolina), Raleigh, North Carolina
Schlagenhauf, Mildred May (A.B., Greensboro College), Gastonia, North Carolina
Spencer, Judy Ann (B.A., Marshall University), Huntington, West Virginia
Tignor, Carol Ann (B.A., Emory and Henry College), Richmond, Virginia
White, Jerri Woods (A.B., Lander College), Gastonia, North Carolina
Yun, Myung-Ok (B.Th., Methodist Theological Seminary), Seoul, Korea

Special Students

Austin, Dorothy Ann (B.A., University of Bridgeport; M.C.E., Presbyterian School of Christian Education), Swansea, Massachusetts
Brohm, Robert Jay (B.A., Concordia Seminary), Durham, North Carolina
Chance, Dorothy (A.B., Pfeiffer College; M.R.E., Duke University), Durham, North Carolina
Coulbourn, Mildred Elizabeth (B.A., Converse College; M.A., Duke University), Birmingham, Alabama
Harris, John Edward C. (Virginia Theological Seminary), Durham, North Carolina
Holmes, David L. (B.A., Michigan State University; M.A., Columbia University; M.A., Princeton University), Detroit, Michigan

Taj, Amos (B.A., University of Chattanooga), Sialkol, West Pakistan
Taylor, Bruce David (B.A., Trinity College), Lumberton, North Carolina
Woods, William Joseph (A.B., College of the Holy Cross), Durham, North Carolina

Summer Session 1967
(without duplication)

Bumgardner, William Lee (A.B., Pfeiffer College), Kings Mountain, North Carolina
Davis, Gary Wayne (B.A., Morningside College), Nemaha, Iowa
Day, Lawrence A. (B.A., Curry College), Longmeadow, Massachusetts
Kaiser, Ann M. (B.A., Oklahoma City University), Ponca City, Oklahoma
Kerr, William Andrew (A.B., West Virginia University), Morgantown, West Virginia
Roberts, Donald Lee (B.S., Lamar State College of Technology), Port Arthur, Texas
White, Rebecca Clark (B.S., Longwood College), Richmond, Virginia

Enrollment Graduate Division of Religion 1967-68

Battistone, Joseph J. (B.A., La Sierra College; M.A., Andrews University; B.D., Harvard Divinity School), Coolidge, Arizona

Beauchamp, Richard A. (B.A., Randolph-Macon College; B.D., Yale Divinity School), Nashville, Tennessee

Brannan, Emora T. (B.A., Johns Hopkins University; B.D., Drew University), Baltimore, Maryland

Brockwell, Charles W., Jr. (B.A., Wofford College; B.D., Harvard Divinity School), Roebuck, South Carolina

Cain, Marvin F. (B.S., Washington State University; B.D., Lutheran Theological Seminary, Gettysburg, Pa.; Th.M., Union Theological Seminary, Richmond), Richmond, Virginia

Cannon, Dale W. (B.A., Seattle Pacific College), Cottage Grove, Oregon

Cook, Jerry O. (B.A., Wofford College; B.D., Duke Divinity School), Startex, South Carolina

Crofts, Richard A. (B.A., Georgetown College; B.D., Southern Baptist Theological Seminary), Anchorage, Kentucky

Darnell, David Rancier (B.A., Florida Christian College; B.D., Brite College of the Bible), Fayetteville, North Carolina

Frederick, Stephen C. (B.A., Hamilton College; B.D., Princeton Theological Seminary), Port Jarvis, New York

Good, Harold H. (B.A., Goshen College; B.D., Goshen College Biblical Seminary), Ontario, Canada

Gravely, William B. (B.A., Wofford College; B.D., Drew Theological School), Pickens, South Carolina

Haddox, M. Bruce (B.A., Stetson University; B.D., Southern Baptist Theological Seminary), St. Cloud, Florida

Heitzenrater, Richard (B.A., Duke University; B.D., Duke Divinity School), Clarion, Pennsylvania

Horton, Fred L., Jr. (B.A., University of North Carolina; B.D., Union Theological Seminary, New York), Roanoke, Virginia

Huber, Donald L. (B.A., Capital University; B.D., Evangelical Lutheran Theological Seminary, Columbus), Columbus, Ohio

Johns, R. Dick (B.A., Centenary College; B.D., Drew University), Mansfield, Louisiana

Johnson, Paul R. (B.A., Bethel College; M. Div., Bethel Theological Seminary), Minneapolis, Minnesota

Kline, Lawrence O. (B.A., Drew University; B.D., Drew University; M.L.S., Rutgers University; M.A., New York, University), Waverly, New York

Koenning, Alton R. (B.A., Texas Lutheran College; B.D., Evangelical Theological Seminary, Columbus), Ganado, Texas

Ladner, Benjamin (B.A., Baylor University; B.D., Southern Baptist Theological Seminary, Louisville), Louisville, Kentucky

Little, James C. (Diploma of Church of Scotland, Trinity College, Glasgow; B.D., Duke Divinity School), Glasgow, Scotland

Lord, James R. (B.A., Presbyterian College; B.D., Princeton Theological Seminary; Th.M., Duke Divinity School), Dublin, Georgia

Malone, Michael T. (B.A., Duke University; B.D., Virginia Theological Seminary), Edenton, North Carolina

Massanari, Ronald L. (B.A., Goshen College; B.D., Garrett Theological Seminary; M.A., University of Wisconsin), Goshen, Indiana

Meeks, M. Douglas (B.A., Southwestern at Memphis; B.D., Duke Divinity School), Memphis, Tennessee

Miller, Gene (A.B., Anderson College; B.D., Anderson School of Theology), Anderson, Indiana

Moretz, Rufus L. (A.B., Lenoir Rhyne College; B.D., Lutheran Theological Southern Seminary), Columbia, South Carolina

Page, Allen F. (B.A., Wake Forest College; B.D., Union Theological Seminary, NYC), Morrisville, North Carolina

Pelkonen, J. Peter (A.B., Wittenberg University; B.D., Hamma Divinity School, Springfield, Ohio), Fort Walton Beach, Florida

Rhoads, David M. (B.A., Gettysburg College; B.D., Lutheran Theological Seminary, Gettysburg), Gettysburg, Pennsylvania

Ridenhour, Thomas E. (A.B., Davidson College; B.D., Lutheran Southern Seminary), Concord, North Carolina

Roetzel, Calvin J. (A.B., Hendrix College; B.D., Perkins School of Theology), Tulsa, Oklahoma

Scarborough, Milton R. (B.A., University of Mississippi; B.D., Baptist Theological Seminary, New Orleans), Gulfport, Mississippi

Scott, R. Taylor (B.S., University of Virginia; B.D., Virginia Theological Seminary; Th.M., Duke Divinity School), Richmond, Virginia

Seymour, Betty Jean (B.A., Furman University; M.A., University of Richmond; M.R.E., Southern Baptist Theological Seminary), Kingstree, South Carolina

Sharpe, John L. (B.A., Wofford College; B.D., Duke Divinity School), Blythewood, South Carolina

Smith, Gerald L. (A.B., University of Richmond; B.D., Duke Divinity School), Fredericksburg, Virginia

St. Clair, Edward B. (B.A., George Washington University; B.D., Southeastern Seminary, Wake Forest), Arlington, Virginia

Strickland, William R., Jr. (B.A., Maryville College; B.D., Louisville Presbyterian Theological Seminary), St. Petersburg, Florida

Thursby, Gene R. (B.A., Oberlin College; B.D., Graduate School of Oberlin College), Akron, Ohio

Turner, John D. (B.A., Dartmouth College; B.D., Th.M., Union Theological Seminary, Richmond), Wayne, New Jersey

Weeks Louis B., III (A.B., Princeton University; B.D., Union Theological Seminary, Virginia), Richmond, Virginia

Wertz, Robert G. (B.A., DePauw University; B.D., Drew University), Williamsport, Pennsylvania

White, Marcia (B.A., Wake Forest College), Forest City, North Carolina

Wilbanks, Dana W. (B.A., Trinity University; B.D., Union Theological Seminary, NYC), El Paso, Texas

Yamamori, Tetsunao (B.A., Northwest Christian College, Eugene, Oregon; B.D., Brite Divinity School), Nakamura, Japan

Enrollment Summary

Divinity School Students (235 M.Div., 23 Th.M., 10 M.R.E., 8 special), academic year, 1967-68, 275; Summer Session (without duplication), 8; Graduate Program of Religion Students, academic year 1967-68, 47; Total, 331.

(The statistics below do not include students of the Graduate Division of Religion.)

Institutions Represented

Adrian College	2	The College of Charleston	1
Allegheny College	1	College of the Holy Cross	1
Alma College	1	Columbia Bible College	1
American University	2	Columbia University	1
Appalachian University	1	Concordia Seminary	1
Arkansas State University	1	Concordia Theological Seminary	3
Asbury College	1	Covenant Theological Seminary	1
Athenaeum Angelicum	1	Converse College	1
Atlantic Christian College	3	Davidson College	5
Baker University	1	Drew University	1
Baldwin-Wallace College	1	Duke University	23
Berea College	2	East Carolina University	1
Berry College	1	Eastern Baptist Seminary	1
Bethany-Nazarene College	1	Eastern Pilgrim College	1
Bethune-Cookman College	1	Elon College	1
Birmingham-Southern College	5	Emory & Henry College	2
Boston University School of Theology	1	Emory University	3
Bradley University	1	Findlay College	1
Campbell College	2	Florida Southern College	4
Carson-Newman College	1	Florida State University	7
Catawba College	2	Frederick College	1
Centenary College	2	Greensboro College	4
Central Michigan University	1	Greenville College	1
Claflin College	1	Guilford College	2
Clarion State College	1	Hamline University	1
Coker College	1	Hartwick College	1
		Hendrix College	3

High Point College	10
Hiram College	2
Hope College	3
Huntington College	2
Illinois Wesleyan University	2
Kentucky Wesleyan College	1
King College	3
Lamar State College of Technology	1
Lambuth College	1
Lander College	1
Lee College	2
Leigh College, Sidney	1
Lincoln Memorial University	2
Longwood College	1
Lutheran School of Theology	1
Lynchburg College	1
MacMurray College	1
Marshall University	4
McMurry College	1
Methodist College	1
Methodist Theological Seminary	1
Michigan State University	2
Millsaps College	3
Mississippi College	1
Mississippi State University	1
Morningside College	3
Morris Harvey College	1
Mt. Union College	2
Nebraska Wesleyan University	1
New Brunswick Seminary	1
New Orleans Seminary	1
North Carolina Agricultural and Technical University	1
North Carolina College	1
North Carolina State University	4
North Carolina Wesleyan College	7
North Texas State University	1
Oberlin College	1
Ohio Northern University	1
Ohio University	1
Ohio Wesleyan University	2
Oklahoma City University	1
Peabody College	1
Pennsylvania State University	1
Perkins School of Theology	2
Pfeiffer College	10
Presbyterian College	1
Presbyterian School of Christian Education	1
Princeton University	2
Randolph-Macon College	4
Rice University	1
Scarritt College	1
Seoul Methodist Seminary	1
Shorter College	1
Simpson College	1
Southern Baptist Theological Seminary	2
Southern Methodist University	2
Southwestern at Memphis	3
Southwestern University	3
St. Andrews College	1
St. Augustine's College	1
Stephen F. Austin State College	1
Stetson University	1
Taylor University	1
Tennessee Wesleyan College	3
Trinity College	1
Troy State College	1
Union Theological Seminary Richmond	2
University of Alabama	1
University of Bridgeport	1
University of California	1
University of Chattanooga	1
University of Ghana	1
University of Maryland	1
University of Michigan	1
University of North Carolina	12
University of North Carolina—Charlotte	2
University of Notre Dame	1
University of Richmond	3
University of South Carolina	2
University of Southern Florida	1
University of Tampa	1
University of Tennessee	1
University of Virginia	1
University of Wisconsin	1
Valparaiso University	1
Vanderbilt University	1
Virginia Military Institute	1
Wake Forest University	1
Washington and Lee University	2
Wesleyan University	1
Western Carolina University	2
Western Maryland College	1
West Liberty State College	1
West Virginia Institute of Technology	1
West Virginia University	2
West Virginia Wesleyan College	5
Wheaton College	2
William Jewell College	1
William and Mary College	2
Wofford College	11

Denominations Represented

Methodist	227
Presbyterian	16
Baptist	13
Lutheran	7
United Church of Christ	5
Episcopal	5
Church of Christ	2
Roman Catholic	2
African Methodist Episcopal	1
Church of God	1
Church of God in Christ	1
Disciples of Christ	1
Nazarene	1
Pilgrim	1
Reformed Church in America	1
No denomination listed	1
Total	285

Geographical Distribution

North Carolina	98
Virginia	21
Florida	22
South Carolina	17
West Virginia	12
Michigan	10
Pennsylvania	10
Alabama	11
Ohio	7
Tennessee	8
Texas	9
Mississippi	6
Arkansas	5
Georgia	5
New York	5
Illinois	4
Kentucky	3
Maryland	3
Oklahoma	3
California	2
Delaware	2
Iowa	2
Louisiana	2
Massachusetts	2
Missouri	2
Idaho	1
Indiana	1
Kansas	1
Minnesota	1
Nebraska	1
New Jersey	1
Oregon	1
South Dakota	1
England	1
Ghana	1
Korea	2
Tonga	1
West Pakistan	1
Total	285

1968

JULY

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AUGUST

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SEPTEMBER

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OCTOBER

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NOVEMBER

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DECEMBER

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1969

JANUARY

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JUNE

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OCTOBER

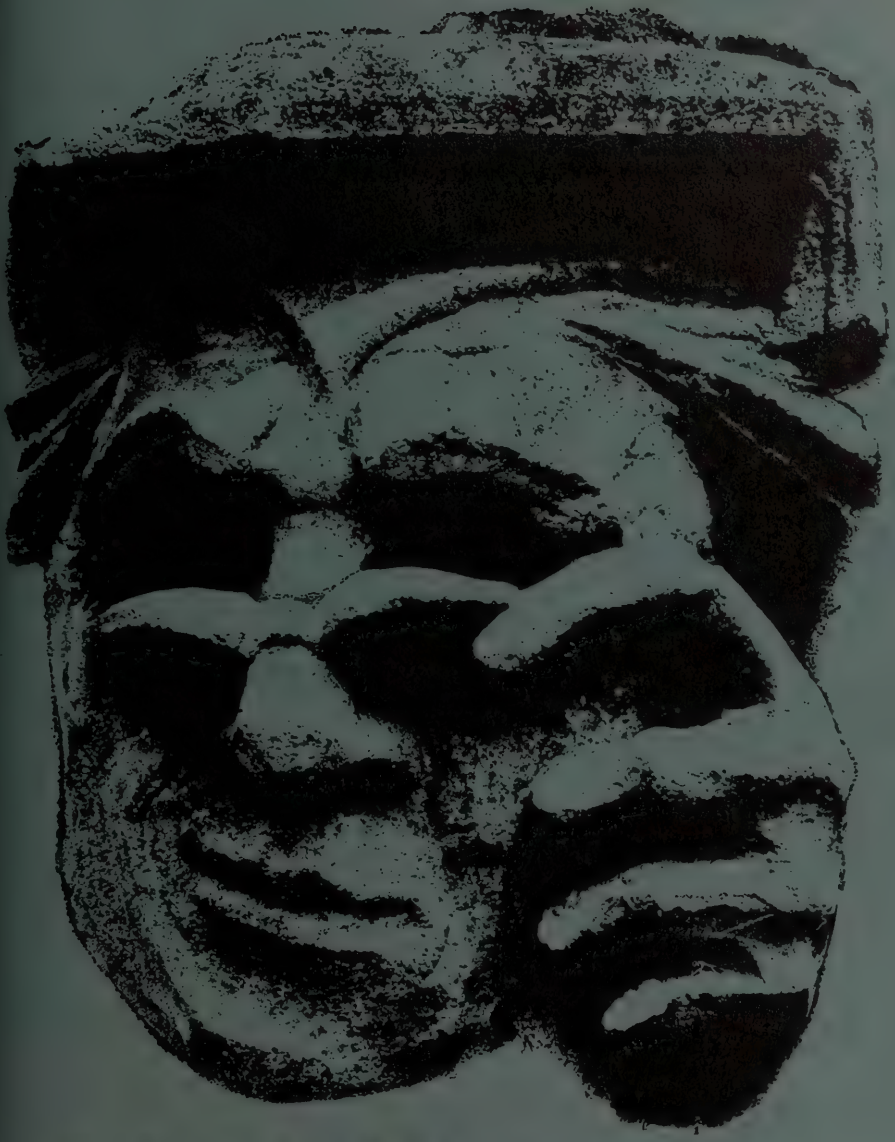
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NOVEMBER

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DECEMBER

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21	22	23	24	25	26	27
28	29	30	31			



School of Engineering
1968

BULLETIN OF
DUKE UNIVERSITY

Annual Bulletins

For *Bulletin of Information for Prospective Students,* apply to Office of Undergraduate Admissions, Duke University, Durham, N. C. 27706

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Cover design adapted from a photograph of a limestone carving of a professor beside a doorway in the Student Union Building.

BULLETIN OF DUKE UNIVERSITY

School of Engineering
1968

Durham, North Carolina 1968

Table of Contents

University Calendar *v*
Officers of Administration *vii*
Faculty and Teaching Staff *ix*
Board of Visitors *xiv*
Supporting Staff *xiv*

The Profession of Engineering 1

General Information 2
Engineering at Duke University 2
History 3
Organization 3
Physical Plant 5

Programs of Study and Requirements for Degrees 6
Undergraduate Degree Offered 6
Department of Civil Engineering 9
Department of Electrical Engineering 12
Department of Mechanical Engineering 15
Interdisciplinary Major 18
Division of Biomedical Engineering 18
Graduate Degrees Offered 20

Undergraduate Special and Cooperative Programs 23
Reserve Officers Training Corps 23
Advanced Placement Program 24
Study Abroad 24
Eligibility for Special Curricular Programs 25
Reciprocal Agreement with the Consolidated University of North Carolina 26

Student Life 27
Living Accommodations 27
Services Available 28

Organizations and Activities 29
Engineering Awards and Prizes 31

Admission 33
Undergraduate 33
Graduate 35

Financial Information 37
Undergraduate Fees and Expenses 37
Graduate Fees and Expenses 40
Undergraduate Financial Aid 41
Graduate Financial Aid 43

University Registration and Regulations 45
Undergraduate Registration 45
Undergraduate Academic Regulations 46
Eligibility for Undergraduate Academic Honors 51
Graduate Registration 52
Regulations Governing Graduate Degrees 54
Graduate Academic Regulations 60
Undergraduate Nonacademic Regulations 63

Courses of Instruction 65
Undergraduate Engineering Non-Departmental Courses 65
Civil Engineering 67
Electrical Engineering 73
Mechanical Engineering 80
Non-Engineering Subjects in Core Curricula 85
Recommended Minor Subjects for Graduate Students 87

Index 89

University Calendar 1968-1969

September

13 Friday, 7:30 p.m.—Freshman Week begins: Assemblies for all new students entering the School of Engineering, Trinity College, The Woman's College, and the School of Nursing

16 Monday—Registration and matriculation of all students of the School of Engineering, Trinity College, The Woman's College, and the School of Nursing who have not pre-registered. Registration of graduate students

18 Wednesday—Final Registration of pre-registered students

18 Wednesday, 8:00 p.m.—University Convocation. Indoor Stadium

19 Thursday, 8:10 a.m.—Fall semester classes begin

November

2 Saturday—Last day for reporting six-weeks grades

11–14 Pre-registration for Spring Semester

27 Wednesday, 12:30 p.m.—Thanksgiving recess begins

December

2 Monday, 8:10 a.m.—Classes resume

11 Wednesday—Founders' Day

21 Saturday, 12:30 p.m.—Christmas recess begins

January

6 Monday, 8:10 a.m.—Classes resume

11 Saturday, 12:30 p.m.—Fall semester classes end

15 Wednesday—Final Examinations begin

24 Friday—Final Examinations end

29 Wednesday—Registration and matriculation of new students

30 Thursday—Last day for matriculation for the spring semester

31 Friday, 8:10 a.m.—Spring semester classes begin

March

12 Wednesday—Last day for reporting six-weeks grades

22 Saturday, 12:30 p.m.—Spring recess begins

31 Monday, 8:10 a.m.—Classes resume

April

7–10 Pre-registration for Fall semester

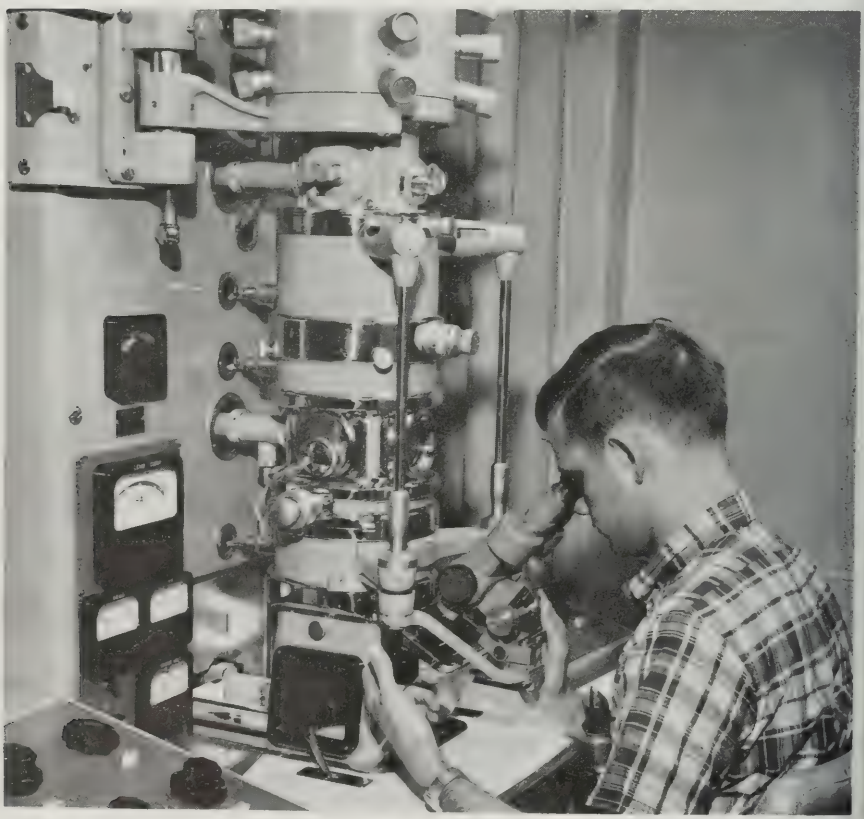
May

15 Thursday, 5:00 p.m.—Spring semester classes end
19 Monday—Final examinations begin
28 Wednesday—Final examinations end
31 Saturday—Commencement begins

June

1 Sunday—Commencement Sermon
2 Monday—Graduating Exercises

(For complete calendar of the Graduate School, refer to *Bulletin of the Graduate School of Arts and Sciences.* For calendar of the Summer Session refer to *Bulletin of the Summer Session.*)



Officers of Administration

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Frank Leon Ashmore, A.B., *Vice President for Institutional Advancement*
Gerhard Chester Henricksen, M.A., C.P.A., *Vice President and Treasurer*
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Charles B. Huestis, *Vice President for Business and Finance*
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Harold Walter Lewis, Ph.D., *Vice Provost and Dean of Arts and Sciences*
Richard Lionel Predmore, D.M.L., *Vice Provost and Dean of the Graduate School of Arts and Sciences*
Craufurd David Goodwin, Ph.D., *Assistant Provost*
Robert L. Dickens, M.S., C.P.A., LL.D., *Acting Assistant Provost*
William J. Griffith, A.B., *Assistant to the Provost in the Area of Student Affairs*
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Rufus H. Powell, LL.B., *Secretary of the University*
Stephen Cannada Harward, A.B., C.P.A., *Assistant Secretary and Controller*
Edwin Constant Bryson, LL.B., *University Counsel*

Engineering Administration

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Edward Kready Kraybill, Ph.D., *Associate Dean for Undergraduate Study*

Richard Lionel Predmore, D.M.L., *Dean of the Graduate School of Arts and Sciences*
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Thomas George Wilson, Sc.D., *Chairman, Department of Electrical Engineering*
Jack Bartley Chaddock, Ph.D., *Chairman, Department of Mechanical Engineering*
Lambert Sigfred Linderoth, Jr., M.E., *Research Coordinator*
Mrs. Dorothy Holt McElduff, A.B., *Recorder*



Faculty and Teaching Staff

Department of Civil Engineering

Acting Chairman: David William Hill
Director of Undergraduate Studies: Edward Henry Bryan
Director of Graduate Studies: Aleksandar Sedmak Vesić

*Earl Ivan Brown, II (1960), Ph.D. (Texas), *J. A. Jones Professor of Civil Engineering*
*Edward Henry Bryan (1960), Ph.D. (Wisconsin), *Professor of Civil Engineering*
*Aleksandar Sedmak Vesić (1964), D.Sc. (Belgrade), *Professor of Civil Engineering*

---

†*Furman Wyche Barton (1964), Ph.D. (Illinois), *Associate Professor of Civil Engineering*
*David William Hill (1962), Ph.D. (Stanford), *Associate Professor of Engineering Mechanics*
*Aubrey Edwin Palmer (1944), C.E. (Virginia), *Associate Professor of Civil Engineering*

---

*K. Pete Arges (1953), M.S.C.E. (Tennessee), *Assistant Professor of Civil Engineering*
Jiri Dvorak (1967), C.Sc. (Prague), *Assistant Professor of Civil Engineering*
*Bruce J. Muga (1967), Ph.D. (Illinois), *Assistant Professor of Civil Engineering*
James F. Wilson (1967), Ph.D. (Ohio State), *Assistant Professor of Civil Engineering*

---

††Paul Day Cribbins (1968), Ph.D. (Purdue), *Visiting Professor of Civil Engineering*

*Registered Professional Engineer.
†Resigned, effective August 31, 1967.
††Spring Semester, 1968.

Sudhir Kumar (1958), Ph.D. (Pennsylvania State), *Part-time Visiting Associate Professor of Civil Engineering*

ΔΔPatrick H. McDonald, Jr. (1967), Ph.D. (Northwestern), *Visiting Professor of Civil Engineering*

*George Kyle Coffin (1967), M.S. (Duke), *Part-time Instructor in Civil Engineering*

*Robert Michael Koerner (1967), M.S.C.E. (Drexel Institute of Technology), *Part-time Instructor in Civil Engineering*

Department of Electrical Engineering

Chairman: Thomas George Wilson
Director of Undergraduate Studies: Otto Meier, Jr.
Director of Graduate Studies: Robert Blackburn Kerr

†John Leslie Artley (1955), D.Eng. (Johns Hopkins), *Professor of Electrical Engineering*

Otto Meier, Jr. (1934), Ph.D. (Pennsylvania), *Professor of Electrical Engineering*

††Harry Ashton Owen, Jr. (1951), Ph.D. (North Carolina State), *Professor of Electrical Engineering*

Δ*Charles Rowe Vail (1939), Ph.D. (Michigan), *Professor of Electrical Engineering*

*Thomas George Wilson (1959), Sc.D. (Harvard), *Professor of Electrical Engineering*

Robert Mercer Burger (1962), Ph.D. (Brown), *Adjunct Associate Professor of Electrical Engineering*

Robert Blackburn Kerr (1965), D.Eng. (Johns Hopkins), *Associate Professor of Electrical Engineering*

*Edward Kready Kraybill (1939), Ph.D. (Michigan), *Associate Professor of Electrical Engineering*

Theo Clyde Pilkington (1958), Ph.D. (Duke), *Associate Professor of Electrical Engineering and Associate Professor of Biomedical Engineering*

Fredrick Louis Thurstone (1967), Ph.D. (North Carolina State), *Associate Professor of Electrical Engineering and Associate Professor of Biomedical Engineering*

*Bruce Arrington Wells (1964), M.S.E.E. (Oregon State), *Associate Professor of Electrical Engineering*

Rhett Truesdale George, Jr. (1957), Ph.D. (Florida), *Assistant Professor of Electrical Engineering*

*Registered Professional Engineer.
†Absent on Sabbatical Leave, Spring Semester, 1968 and Fall Semester, 1968.
††Absent on Sabbatical Leave, 1967-68.
ΔResigned, Effective August 31, 1967.
ΔΔFall Semester, 1967.

Herbert Hacker, Jr. (1965), Ph.D. (Michigan), *Assistant Professor of Electrical Engineering*

William Thomas Joines (1966), Ph.D. (Duke), *Assistant Professor of Electrical Engineering*

Loren William Nolte (1966), Ph.D. (Michigan), *Assistant Professor of Electrical Engineering*

Robert Leon Beadles (1968), M.S. (Pittsburgh), *Lecturer in Electrical Engineering*

†Billy Brown Olive (1957), B.S. in E.E. (Duke); LL.B. (St. John's), *Lecturer in Electrical Engineering*

Carl Duncan Parker (1966), M.S. (Duke), *Lecturer in Electrical Engineering*

Yale Nance Patt (1968), Ph.D. (Stanford), *Lecturer in Electrical Engineering*

*Philip Harold Trickey (1965), M.S.E.E. (Maine), *Lecturer in Electrical Engineering*

Jimmie Jack Wortman (1964), Ph.D. (Duke), *Lecturer in Electrical Engineering*

Department of Mechanical Engineering

Chairman: Jack Bartley Chaddock
Director of Undergraduate Studies: Van Leslie Kenyon, Jr.
Director of Graduate Studies: George Wilbur Pearsall

*Jack Bartley Chaddock (1966), Sc.D. (Massachusetts Institute of Technology), *Professor of Mechanical Engineering*

*Van Leslie Kenyon, Jr. (1945), M.M.E. (Delaware), *Professor of Mechanical Engineering*

*Lambert Sigfred Linderoth, Jr. (1965), M.E. (Iowa State), *Professor of Mechanical Engineering*

*John Nelson Macduff (1956), M.M.E. (New York University), *Professor of Mechanical Engineering*

*James Lathrop Meriam (1963), Ph.D. (Yale), *Professor of Engineering Mechanics*

George Wilbur Pearsall (1964), Sc.D. (Massachusetts Institute of Technology), *Professor of Mechanical Engineering*

---

*Thomas Allan Boyle (1957), M.S.M.E. (Lehigh), *Associate Professor of Mechanical Engineering*

Howard G. Clark (1968), Ph.D. (Maryland), *Associate Professor of Mechanical Engineering and Associate Professor of Biomedical Engineering*

*Registered Professional Engineer.
†Registered Patent Attorney.

*Ernest Elsevier (1950), M.S.M.E. (Georgia Institute of Technology), *Associate Professor of Mechanical Engineering*

*Charles Morgan Harman (1961), Ph.D. (Wisconsin), *Associate Professor of Mechanical Engineering*

Forest Orion Mixon (1962), Ph.D. (Delaware), *Adjunct Associate Professor of Mechanical Engineering*

James Joseph Murray (1954), S.M. (Chicago), *Adjunct Associate Professor of Mechanical Engineering*

---

*Gale Herbert Buzzard (1957), Ph.D. (North Carolina State), *Assistant Professor of Mechanical Engineering*

*Ralph Elton Lewis (1941), M.S.M.E. (Illinois), *Assistant Professor of Mechanical Engineering*

*Thomas Hawkes Nash, Jr. (1959), B.S. (Iowa State), M.A. (North Carolina), *Assistant Professor of Mechanical Engineering*

Marion LaVerne Shepard (1967), Ph.D. (Iowa State), *Assistant Professor of Mechanical Engineering*

Daniel P. Werner (1968), Ph.D. (Michigan), *Assistant Professor of Mechanical Engineering*

Donald Wright (1967), Ph.D. (Purdue), *Assistant Professor of Mechanical Engineering*

---

*Donald Bernard Warner (1967), M.S.M.E. (Nova Scotia Technical College), *Instructor in Mechanical Engineering*

Division of Biomedical Engineering

Chairman: Theo Clyde Pilkington

John Wilson Moore (1961), Ph.D. (Virginia), *Professor of Biomedical Engineering and Professor of Physiology*

Howard G. Clark (1968), Ph.D. (Maryland), *Associate Professor of Biomedical Engineering and Associate Professor of Mechanical Engineering*

Theo Clyde Pilkington (1958), Ph.D. (Duke), *Associate Professor of Biomedical Engineering and Associate Professor of Electrical Engineering*

Fredrick Louis Thurstone (1967), Ph.D. (N. C. State), *Associate Professor of Biomedical Engineering and Associate Professor of Electrical Engineering*

Howard Wachtel (1967), Ph.D. (New York), *Assistant Professor of Biomedical Engineering and Assistant Professor of Physiology*

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*Registered Professional Engineer.

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Mechanical Engineering: J. B. Chaddock
Research Coordinator: L. S. Linderoth, Jr.

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Physics: Macduff; Muga, T. G. Wilson
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Frank Nicholas Egerton, A.M., E.E., *Associate Professor Emeritus of Electrical Engineering*

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Carl F. Floe	William S. Lee	Hugh E. Whitted, Jr.
H. L. Flowers	M. P. O'Brien	R. Taylor Cole, ex officio
R. G. Folsom	Robert H. Pinnix	J. Lathrop Meriam, ex officio

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Recorder: Mrs. Dorothy Holt McElduff, A.B.
Supervisor, Central Services: Joseph Philip Edwards

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William Edward Hammond, Ph.D. (Duke), *Biomedical Engineering*
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Robert B. Roe, Jr., Ph.D. (Duke), *Electrical Engineering*

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Jean-Philipe Gaillard, Diplome d'ingenieur (Ecole Centrale Lyonnaise), *Mechanical Engineering*
Henry Lau, B.S. (Tennessee), *Mechanical Engineering*
Alexander Lim, B.S.M.E. (University of Santo Tomas), *Mechanical Engineering*
Gerald K. Moore, B.S. (Johns Hopkins), *Electrical Engineering*

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C. Blake McDowell, III, M.S. (Duke), *Electrical Engineering*
Gerd Rechten, Vordiplon (Technical University, Munich), *Electrical Engineering*
William A. Sander, III, M.S. (Duke), *Electrical Engineering*

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Rajendra S. Bhatnagar, B.S.C.E. (University of Roorkee), *Civil Engineering*
Amalendu Bhattacharya, B. Tech. (Indian Institute of Technology), *Mechanical Engineering*
Kul Bhushan, M.S. (Punjab Engineering College), *Civil Engineering*
Hriday Nath Darbari, B.Sc. (Banaras Engineering College), *Civil Engineering*
Veto Galante, B.S.C.E. (The Citadel), *Civil Engineering*
Terence J. Gosciniak, B.S. (Drexel Institute of Technology), *Electrical Engineering*
James R. Griffin, M.S. (Vanderbilt), *Electrical Engineering*
Rajender M. Gupta, B.S. (Louisiana State), *Electrical Engineering*
Jake H. Halford, B.S.E.E. (South Carolina), *Electrical Engineering*
John Hartwell, M.S. (Duke), *Electrical Engineering*
Chao Hsiung Hu, M.S. (Duke), *Civil Engineering*
Sidney Kauffman, B.S.E.E. (Duke), *Electrical Engineering*
Bruce W. Kinney, Jr., B.S. (South Florida), *Electrical Engineering*
F. Barry McWilliams, B.S.E.E. (Duke), *Electrical Engineering*
David E. Miller, M.S. (Duke), *Electrical Engineering*
M. Mamdouh Moussa, B.S.C.E. (Cairo University), *Civil Engineering*
Surendra Kumar Saxena, M.S. (Duke), *Civil Engineering*
Frederick G. Sheppard, B.S.C.E. (Duke), *Civil Engineering*
Archie Cheng-chi Shiau, B.S. (National Taiwan University), *Civil Engineering*
Stanley Chin-nan Shieh, B.S. (National Taiwan University), *Civil Engineering*
Cheng-Chuan Shih, M.S. (Virginia Polytechnic Institute), *Civil Engineering*
Barry A. Stein, M.A. (Columbia), *Electrical Engineering*

Tein-lie Tai, M.S.C.E. (Georgia Institute of Technology), *Civil Engineering*
Hai-chuan Tang, M.S. (Cheng-Kung University), *Civil Engineering*
Gerard Pierre-Louis Toussaint, M.S. (Duke), *Civil Engineering*
Harry W. Tyrer, B.S. (Miami), *Electrical Engineering*
Dong-shan Wu, B.S. (Cheng Kung University), *Civil Engineering*

Fellows and Trainees

Chadwick M. Baker, B.S. (Christian Brothers College), *National Aeronautics and Space Administration Trainee, Electrical Engineering*
Ralph Willet Barnes, Jr., M.S.E. (Pennsylvania), *National Institutes of Health Trainee, Electrical Engineering*
Roger C. Barr, B.S. (Physics) (Duke), *National Institutes of Health Trainee, Electrical Engineering*
Ernest G. Baxa, Jr., B.E.E. (Virginia), *National Defense Education Act Fellow, Electrical Engineering*
Sherrill Bost Biggers, Jr., B.S.C.E. (North Carolina State), *National Defense Education Act Fellow, Civil Engineering*
Michael C. Booth, B.S.C.E. (Duke), *National Defense Education Act Fellow, Civil Engineering*
Gordon Powers Boutwell, Jr., M.S.C.E. (Georgia Institute of Technology), *James B. Duke Fellow, Civil Engineering*
Jerry Clayton Collins, M.S.E.E. (Purdue), *National Science Foundation Trainee, Electrical Engineering*
James Crozier, B.Sc. (Rensselaer Polytechnic), *National Aeronautics and Space Administration Trainee, Mechanical Engineering*
Richard Fair, M.S.E.E. (Pennsylvania State), *National Defense Education Act Fellow, Electrical Engineering*
Marshall A. Gallop, B.S.E.E. (Duke), *National Defense Education Act, Electrical Engineering*
Charles P. Hatsell, B.S. (Virginia Polytechnic), *National Science Foundation Trainee, Electrical Engineering*
Richard O. Martin, M.S. (Notre Dame), *National Institutes of Health Trainee, Electrical Engineering*
Norman Lee Owsley, M.S. (Duke), *National Aeronautics and Space Administration Trainee, Electrical Engineering*
Arthur M. Sherwood, M.S. (Georgia Institute of Technology), *National Science Foundation Trainee, Electrical Engineering*
John Marshall Slepetz, M.C.E. (Virginia), *National Science Foundation Trainee, Civil Engineering*
Hari K. Varma, M.E. (University of Roorkee) *UNESCO Fellow, Mechanical Engineering*

Wilkie A. Wilson, Jr., B.S. (Louisiana State A.&M.), *National Defense Education Act Trainee, Electrical Engineering*
Robert H. Wyatt, M.S. (Duke), *National Aeronautics and Space Administration Trainee, Electrical Engineering*

Clerical and Technical

Lester Barham, *Laboratory Technician in Electrical Engineering*
Jay L. Benbow, *Electronic Technician, Central Services*
Mrs. Leon S. Brooks, *Secretary, Electrical Engineering Department*
Mrs. Spurgeon G. Buchanan, *Secretary to the Dean*
William Glenwood Clayton, *Laboratory Technician in Mechanical Engineering*
James Edward Grasty, *Assistant Technician in Mechanical Engineering*
Jimmy R. Hartley, *Electronics Technician in Electrical Engineering*
Dyson W. Hickingbotham, *Instrument Marker, Central Services*
Mrs. James A. Humphries, *Secretary, Dean's Office*
Mrs. Robert James, *Secretary, Mechanical Engineering Department*
Marvin Primo King, *Laboratory Technician in Civil Engineering*
William Thomas Lessig, *Engineering Illustrator, Central Services*
Mrs. Joyce M. Pate, *Secretary, Electrical Engineering Department*
Robert Lee Penley, *Electronics Technician in Electrical Engineering*
Mrs. William Perry, *Secretary, Mechanical Engineering Department*
James Harold Phillips, *Electronics Technician in Electrical Engineering*
Mrs. James R. Porter, *Secretary, Civil Engineering Department*
Albert Richard Rade, *Technical Photographer, Central Services*
Ben Herman Rimer, *Electronics Technician in Electrical Engineering*
Mrs. Ronald Russell, *Secretary, Civil Engineering Department*
Mrs. Dorothy S. Stephenson, *Secretary, Central Services*
Alonzo George Vaughan, *Laboratory Technician in Civil Engineering*
David Council Watson, *Bookkeeper in Electrical Engineering Department*
Mrs. David T. Wells, *Library Assistant*
Mrs. Otis J. Wheelhouse, Jr., *Secretary, Dean's Office*

The Profession of Engineering

Throughout history engineering has continually interacted with the rest of human society in a highly determinative way. Its influence is evident in the very fabric of our culture. Engineering has provided the means for feeding, clothing, and sheltering mankind. It has largely freed man from physical drudgery and from the slavery of routine mental effort. It has provided the tools of new scientific discovery, as well as those of new art forms. It has provided the means of bringing to mankind everywhere the results of the creative efforts of the great artists, writers, scientists, and philosophers of both ancient and modern times. It has placed man in close contact with his fellowmen throughout the world, and is now concerned with placing man on the moon. The engineer achieves imaginative new solutions to many of the very real problems that confront mankind.

No simple formal definition suffices to portray the multifaceted activity which is engineering. A partial picture is afforded by the statement that "engineering is the profession in which knowledge of mathematics and the physical sciences is applied to develop ways of utilizing economically the materials and forces of nature for the well-being of mankind." The engineer fully utilizes scientific principles and concepts. However, the modern practice of engineering is interdisciplinary, and the engineer must be both scientist and artist, both theoretician and pragmatist, both analyst and synthesist. In the words of the late Theodore von Kraman: "The scientist explores what is; the engineer creates what has never been." The modern engineer has the need to be broad as well as deep in his knowledge and interests, and his education must reflect this need.

General Information

Engineering at Duke University

Duke University, a privately supported institution of higher education in Durham, North Carolina, has about 7,800 students enrolled in nine divisions: Trinity College and The Woman's College (undergraduate liberal arts colleges for men and women), the Graduate School of Arts and Sciences, and the professional schools—Divinity School, School of Engineering, School of Forestry, School of Law, School of Medicine, and School of Nursing. Annually student enrollments represent nearly every state and approximately sixty-five foreign countries. The University is a member of the Southern Association of Colleges and Schools and of the Association of American Universities. The University also holds institutional membership in relevant professional societies, including the Engineering College Administrative Council and the Engineering College Research Council.

As part of the University community, students in the engineering programs share in a total educational experience that only a major university can provide. The School of Engineering shares the same campus with Trinity College, the Graduate School of Arts and Sciences, the Divinity School, and the Schools of Forestry, Law, Medicine.

History

The School of Engineering of Duke University offers programs of instruction and research at all three degree levels: Bachelor's, Master's, and Doctor's. The School traces its origin to 1851, when the catalogue of Normal College, the forerunner of Trinity College and Duke University, advertised a "Classical" course which included surveying in the sophomore year and architecture and engineering for seniors. Similar offerings characterized instruction in engineering throughout the seventy-three-year period of the institution's operation as Trinity College.

With the change of name to Duke University in 1924 and the concomitant rapid evolution of the institution to its present status as a major university, the program in engineering entered a period of vigorous development which is still under way. Separate departments were established for civil engineering and electrical engineering in 1927, and for mechanical engineering in 1931. In 1937 these three departments were administratively grouped to form the Division of Engineering, which in 1939 was incorporated into the University structure as the College of Engineering, one of three coordinate undergraduate colleges of Duke University. Through the Graduate School of Arts and Sciences, the College began offering work leading to the Master of Science degree in 1957, and to the Doctor of Philosophy degree in 1960. In September, 1966, the name of the College was changed to School of Engineering in recognition of its professional status and of the stature that it had achieved in its program of graduate study and research.

Both on the campus and in the classroom the emphasis is on the individual. To this end classes are kept small and close contact is maintained between professor and student. As a matter of policy, the School is relatively small, with an undergraduate enrollment of about 500. Master's and doctor's work in engineering is offered through the Graduate School of Arts and Sciences.

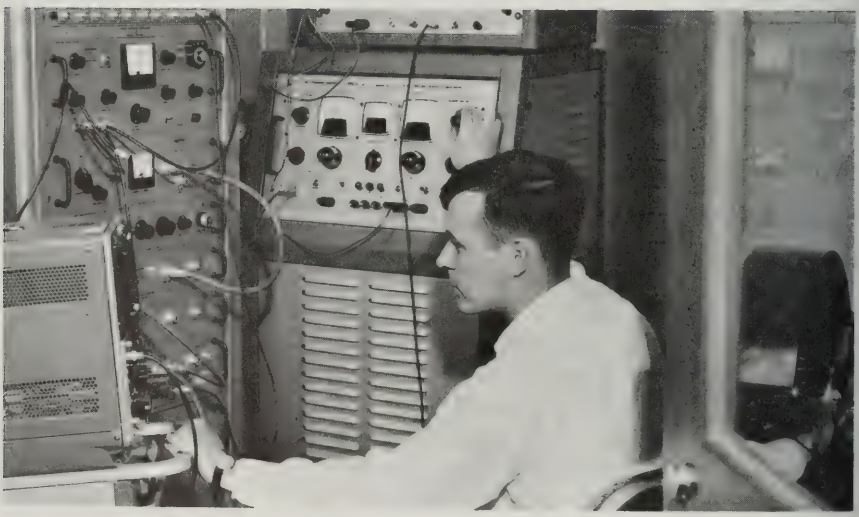
Organization

The affairs of the School of Engineering are administered by the Dean of the School, with the assistance of the Engineering Administrative Council which includes the Associate Dean, the Chairmen of the three Departments of Engineering, and the Research Coordinator. The affairs of each department of engineering are administered by the Chairman of that Department, with the assistance of the Department Faculty. Much of the administrative work of the School is carried out with the assistance of faculty committees.

The graduate programs are administered by the respective engineering departments in coordination with the Graduate School of Arts and Sciences.

The legislative body of the School of Engineering is its Faculty which is composed of the President, the Provost, the Secretary and all members of the University Faculty in the School of Engineering. The membership of the Engineering Faculty also includes the Director of Undergraduate Admissions for the School of Engineering and four members from Arts and Sciences who are elected annually by the Faculty of the School of Engineering, one from Mathematics, one from the Natural Sciences, and one each from two of the following three areas: Humanities, Social Sciences, and History. The Engineering Faculty has responsibility for the curriculum and for determinnig policies in those academic matters that pertain exclusively to the School and subject to the regulations of the University Faculty and its recognized legislative bodies.

The Engineering Faculty Council is composed of two representatives of each of the Departments of the School of Engineering. One of the representatives of each Department is elected by the members of the Faculty in that Department from their own group, and one is elected from each department by vote of the entire Faculty of the School of Engineering. The Dean of the School of Engineering is a member ex-officio. The EFC elects its own Chairman and Secretary, the latter serving also as Secretary to the Faculty of the School. The Council functions as a steering committee for the Faculty: its responsibilities include the preparation of agendas for meetings of the Faculty, and service as the Committee on Faculty Committees.



Physical Plant

The entire School is in a single building on the West Campus. It was first occupied in January 1948. Each of three wings houses the instructional and research laboratories and the special classrooms of one of the three engineering departments. The building also has offices, classrooms, and other general facilities including a library of some 39,000 volumes and 500 periodicals; an auditorium where audio-visual instruction can be given to large groups; conference rooms and seminar rooms; a student lounge; design rooms; facilities for reproducing copy of various types; a central precision shop; and central, as well as departmental computation facilities. The central computation facilities include a console with direct access to the large-scale IBM System / 360 Model 75 computer jointly operated by Duke University and the two nearby state university units.

Rapid evolution of the program of graduate study and research, and the accompanying growth of the Faculty and Staff, have made increasing demands on the physical plant. Accordingly, plans are under study for the enlargement of physical facilities for the school.



Programs of Study and Requirements for Degrees

The School offers fully-accredited engineering curricula. The degree of Bachelor of Science in Engineering (B.S.E.) is offered with majors in civil, electrical, or mechanical engineering and in selected interdisciplinary areas. Through the Graduate School of Arts and Sciences it also provides work leading to the degree of Master of Science (M.S.) and to the degree of Doctor of Philosophy (Ph.D.) in civil, electrical or mechanical engineering.

Undergraduate Degree Offered

Bachelor of Science in Engineering

The School offers a four-year program leading to the degree of Bachelor of Science in Engineering (B.S.E.), with opportunity for majors in the professional fields of civil, electrical, or mechanical engineering, as well as for programs in selected interdisciplinary fields such as biomedical engineering, engineering mechanics, energy conversion, materials, and systems and controls.

For graduation with a bachelor's degree in engineering, a minimum of

134 semester hours* of course work must be completed, including the following:

English. 6 s.h. This requirement is met by the completion of English 1-2.

Mathematics. 15 s.h. This requirement is met by completion of Mathematics 21, 22, 51, 63, and 111.

Natural Science. 16 s.h. This requirement is met by completion of Chemistry 1 and 2 and Physics 51 and 52.

Social Science and History. 6 s.h. This requirement may be satisfied by 6 hours from the following: Economics 1-2, or 51-52; History 1-2, or 51-52; Political Science 11-12 or 61-62; Psychology 91, to be followed by either Psychology 100 or 101; Sociology 91 followed by another sociology course.

Humanities. 6 s.h. This requirement may be satisfied by 6 hours from the following: English 55-56, 57-58; Classical Studies 111, 112, 121, 122; all foreign language literature courses above 100 not given in translation; Philosophy 41-42, 93-94; Art 51-52; Music 1-2, 51-52; Religion 1-2 or 51-52, 55, courses numbered 60-99.

Electives in Social Science, History, or Humanities. 6 s.h. In addition to the above, the student must elect a minimum of 6 semester hours of courses in social sciences, history, or humanities.

Physical Education. 4 s.h. Physical education is required during each of the first two years and is normally completed by the end of the sophomore year.

Departmental or Major Specifications. 43 s.h. In addition to the above requirements, 43 hours of courses in the third and fourth year are specified by the department in which the student is registered. A minimum of 16 hours of the 43 must be engineering courses of which 6 hours must be design-oriented studies.

Engineering Core Courses. 32 s.h. The normal engineering program includes 32 hours of engineering core courses, met by completion of Engineering 1, 2, 23, 53, 63, 73, 83, 101, 113, 123, 133, 143. Under special circumstances, a minimum of 10 hours of the normally required 13 hours of common-core engineering courses from the third- and fourth-year programs may be approved.

To provide the engineering student with the necessary background in

*A maximum of 6 hours of junior or senior level Air Science or Naval Science course work may be counted in satisfying the minimum requirements of 134 hours for a baccalaureate degree in engineering. These 6 hours may not be substituted for any of the above requirements in English, Social Sciences and History, Humanities, or electives in Social Sciences, History, and Humantities. All other credits earned in Air Science or Naval Science are taken in addition to the minimum program.

fundamentals upon which a variety of engineering programs of study can be based, and to relieve him of the necessity of committing himself immediately to a specific major branch of engineering, a common core of courses is provided for the freshman, sophomore, and part of the junior years.

Program of Studies for the Degree of Bachelor of Science in Engineering

Freshman Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Chem 1—Gen. Inorg. Chemistry	4	Chem 2—Gen. Inorg. Chemistry	4
Egr 1—Engineering Design I	2	Engl 2—Freshman Composition	3
Engl 1—Freshman Composition	3	Egr 23—Statics	3
Math 21—Introd. Calculus	3	Engl 2—Freshman Composition	3
Math 51—Digital Computation	3	Math 22—Introd. Calculus	3
PE—Physical Education	1	PE—Physical Education	1
	*16		*16

Sophomore Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
†Egr 73—Mechanics of Deformable Bodies	3	†Egr 53—Egr Design III	2
†Egr 83—Structure & Properties of Solids	3	†Egr 63—Introductory Electric Systems I	4
Social Science, History, or Humanities	3	Social Science, History, or Humanities	3
Math 63—Intermed. Calculus	3	Math 111—Appl. Math Anal. I	3
Phys 51—General Physics	4	Phys 52—General Physics	4
PE—Physical Education	1	PE—Physical Education	1
	17		17

Junior Year

(See departmental programs: pages 11, 14, or 17.)

Senior Year

(See departmental programs: pages 11, 14, or 17.)

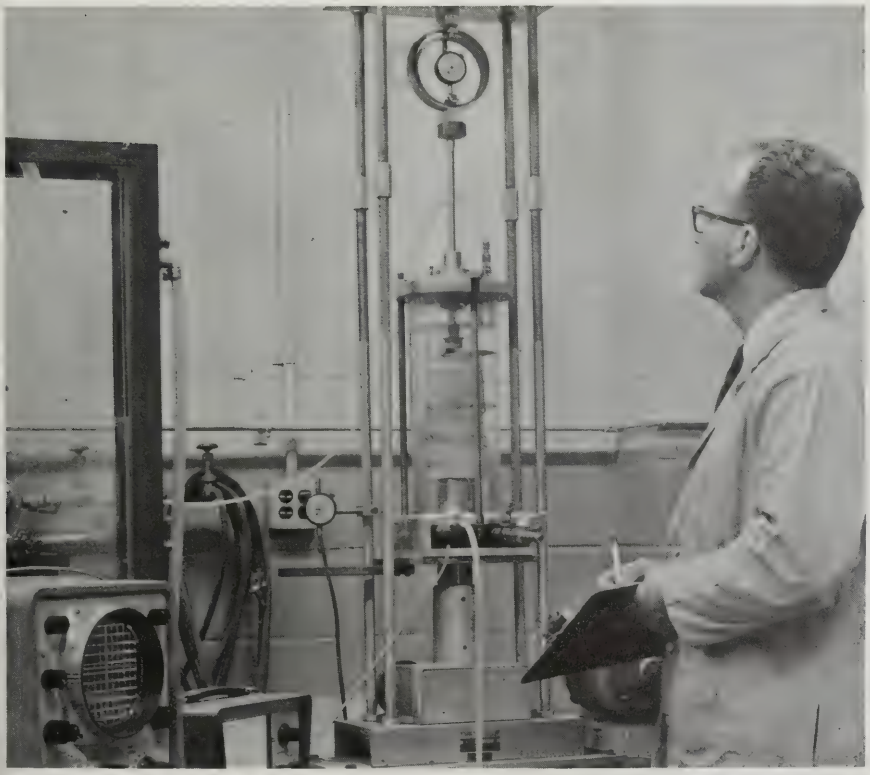
*Freshmen taking Air Science or Naval Science may need to schedule certain courses in addition to the 16 semester hours prescribed.

†The combination of Egr 73 and 83 is interchangeable with the combination of Egr 53 and 63.

Department of Civil Engineering

Although the scope of the civil engineering profession is very broad, its work may be classified into five major fields: *hydraulics*—flood control, river and harbor improvements, irrigation, drainage, and water power; *land utilization*—development of communities, industrial sites, and existing cities; *sanitary engineering*—public health, water supply, and waste disposal; *structures*—bridges, buildings, foundations, dams, tunnels, tanks, thin shells, and missile structures; *transportation*—railroads, highways, airports, waterways, pipelines, and traffic control.

The concern of the civil engineer is primarily with conception, design, and construction, although his responsibility often includes management and maintenance. His undergraduate education comprises scientific, technical, civic, and cultural subjects. In order that he may become qualified to assume responsible charge of engineering work, he must supplement this instruction with progressive study after he graduates and while he is securing his practical experience.



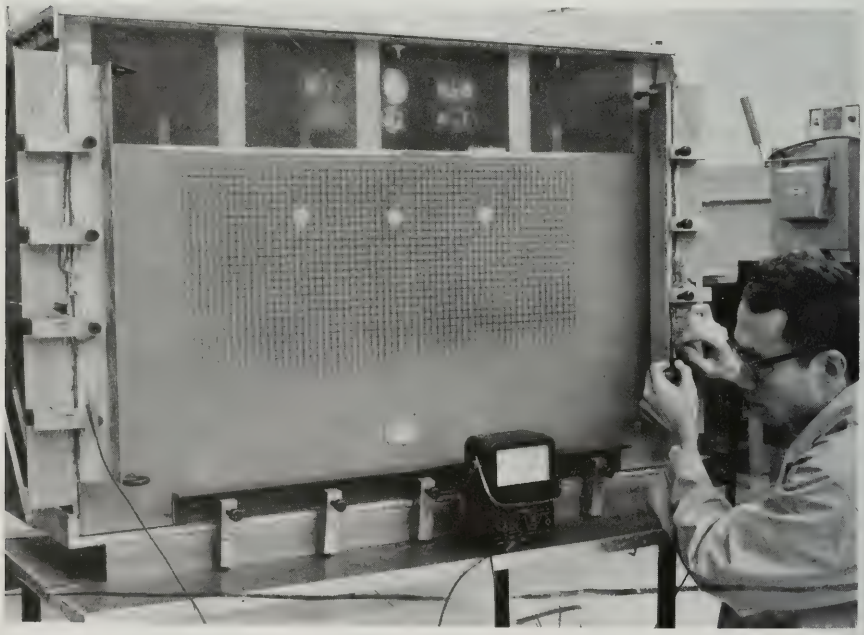
The *Mechanics of Materials Laboratory* is equipped to give instruction in the basic principles of stress and strain and for the testing of structural members. Its facilities are adequate for both graduate and undergraduate instruction. Included in this laboratory are universal testing machines with capacities to 400,000 pounds; hardness testers; machines for testing torsion, fatigue, and impact; calibration apparatus; and a variety of modern strain gages.

The *Materials Laboratory* has the equipment necessary for both research and instruction in the physical properties and stress-deformation characteristics of bituminous mixtures, concretes, and soils.

For research and instruction in *Stress Analysis* there are various polariscopes with facilities for taking and developing pictures, large-sized Begg's deformeter, loading frames, and miscellaneous tools for preparing accurate models for testing. Modern electrical and mechanical instrumentation is available for strain measurements.

The department has a representative collection of *Surveying Equipment*: transits, levels, plane tables, accessory equipment, precise levels and theodolites.

The *Sanitary Engineering Laboratory* is equipped for instruction and research in the characterization of waters and wastewaters, and in the application of biological, chemical and physical sciences to the solution of technical problems relating to environmental health.



Program of Study in Civil Engineering for the Bachelor of Science in Engineering Degree

For *freshman* and *sophomore* years see page 8.

Junior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Δ*Social Science, History, or Humanities	3	Δ*Social Science, History, or Humanities	3
*Egr 113 Electric Systems II	3	*Egr 101 Thermodynamics	3
*Egr 123 Dynamics	3	*Egr 133 Heat Transfer	2
*Egr 143 Fluid Mechanics	2	CE 96 Measurements	3
CE 131 Structural Mech. I	3	CE 123 Hydraulic Engrg	3
ΔApproved Elective	3	ΔApproved Elective	3
	17		17

Senior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Δ*Social Science, History, or Humanities	3	Δ*Social Science, History, or Humanities	3
CE 118 Materials	2	CE 116 Transportation	3
CE 124 Sanitary Engrg.	3	CE 134 Struct. Design II	3
CE 133 Structural Design I	3	CE 150 Engrg. Systems	2
CE 139 Soil Mechanics	3	CE Elective	3
ΔApproved Elective	3	ΔApproved Elective	3
	17		17

Under special circumstances, a minimum of 25 semester hours of the normally required 31 semester hours of Civil Engineering courses may be approved by the Director of Undergraduate Studies.

First Graduate Year

The Master of Science program is planned as the fifth year of a five-year sequence of studies. Admission to the Master's program follows completion of the requirements for the Bachelor of Science in Engineering

ΔPart of a program of electives planned with departmental approval to suit the interests and abilities of the individual student. The program will include a minimum of 6 semester hours of either economics or political science. The program will also include a minimum of 9 semester hours in mathematics, the natural sciences, or other technical subjects; English 93 will normally be part of these 9 semester hours.

*Common-Core Courses.

degree (at Duke University), or its equivalent (from another institution), and is contingent upon admission to the Graduate School of Arts and Sciences.

First Semester	*units*
CE 200- or 300-level course	3
CE 200- or 300-level course	3
**Minor course	3
Approved elective course	3
Thesis research	3
	15

Second Semester	*units*
CE 200- or 300-level course	3
CE 200- or 300-level course	3
**Minor course	3
Approved elective course	3
Thesis research	3
	15

Subsequent Graduate Study

For further information concerning work leading to the M.S. degree, as well as that leading to the Ph.D. degree, refer to the sections of this Bulletin, beginning on pages 54 and 70.

Department of Electrical Engineering

Electrical Engineering utilizes the electrical and magnetic forces of nature and properties of matter to supply human needs. To an increasing degree its products and services influence the daily living of most of the world's population. It is concerned with the *processing and transmitting of information*—as in radar, television, radio and wire telephony, measurement, electronics, computation, and control. It is equally concerned with the *processing, transmitting, and controlling of energy*—as in solid state converters, magnetohydrodynamic generators, nuclear reactors, rotating machines, power systems, and automatic industrial processes. It provides most of our labor-saving home appliances and many of the instruments of modern scientific research and of modern medical practice.

The professional electrical engineer may engage in consulting, teaching, research, development, design, manufacturing, operation, maintenance, management and sales. His education must therefore provide a fundamental understanding of both the science of electrical engineering, which is based on mathematics and the physical sciences, and the art of electrical engineering, which depends on human imagination and judgment. It must also prepare him to be a responsible member of society by providing him with an appreciation of the humanities and the social sciences.

The program in electrical engineering at Duke, therefore, does not stress the mere acquisition of specific skills and methods, but seeks, in both classroom and laboratory, to stimulate students to think creatively in terms

**Normally Mathematics or Natural Science.

of fundamental concepts. It is hoped that, once started, creativity may become a habit. Such a program requires an able staff, extensive library resources, and well-equipped laboratories, such as are found here. The range of interests in electrical engineering which are included in this program may be conveyed by a brief survey of the laboratory activities.

The *Solid-State Materials Laboratory* is well-equipped for both instructional and research projects in which the macroscopic properties of materials, as exploited in devices, are studied at the microscopic and molecular levels. An X-ray diffraction diffractometer, a 9½-inch magnet, a spin-echo spectrometer, a vacuum deposition system, and metallurgical and stereoscopic microscopes are utilized in this work.

In the *Ferromagnetics Laboratory* investigations are being conducted into such properties of ferromagnetic materials as magneto-thermal, magneto-optical, magneto-resistive and magneto-strictive effects.

Research in the *Superconducting Circuits and Thin-Films Laboratory* is directed toward exploiting for engineering application some of the unique physical phenomena which are observed to obtain at temperatures in the vicinity of absolute zero. Related thin-film research is in progress. A major facility of this laboratory is an electron microscope providing a resolution of 7 Å.

The *Electronic Laboratories* are equipped for the study of the physical behavior of basic electronic components and of advanced electronic devices throughout the sub-radio frequency region.

In the *Energy Conversion Laboratory* the principles of generation, transformation, and control of energy are studied as they are applicable to large-scale power systems and small self-contained systems. Thermoelectric generators, photovoltaic sources, transformers, a-c and d-c motors and generators, and their associated controls are included in this work.

In the *Automatic Control Systems Laboratory* studies are made of the principles underlying the fields of instrumentation and automatic control. Modern, high-performance equipment is available for synthesizing control systems and for determining control system performance.

In the work of the *Spacecraft Systems Laboratory* principles from all phases of electrical engineering are brought to bear upon problems encountered in modern spacecraft technology.

In the *Spacecraft Telemetry Systems Laboratory* research centers on crosscorrelation techniques for the recovery of information contained in noisy signals received from scientific satellites and space probes.

In the *Microwave Circuits Laboratory* studies are made of microwave circuits and systems using both time-domain reflectometry and swept-frequency techniques. Applications to radar and communication systems are shown.

The *Cryomagnetic Materials Laboratory* is equipped for research in the area of magnetic susceptibilities of materials at very low temperatures.

In the *Underwater Acoustic Communications Laboratory* the design and performance of optimum receivers for processing underwater acoustic signals is being investigated.

In the *Biomedical Engineering Laboratory* research is conducted on a diversity of projects ranging from the application of field theory to problems in cardiography to the development of microminiaturized transducers for hemodynamic studies.

Program of Study in Electrical Engineering for the Bachelor of Science in Engineering Degree

For *freshman* and *sophomore* years see page 8.

Junior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Δ*Social Science, History, or Humanities	3	Δ*Social Science, History, or Humanities	3
*Egr 113 Introd. Electric Systems II	3	*Egr 101 Thermodynamics	3
*Egr 123 Dynamics	3	*Egr 133 Heat Transfer	2
*Egr 143 Fluid Mechanics	2	*Egr 163 Fields	3
Math elective beyond Math 111	3	ΔMath elective beyond Math 111	3
Phys 161 Modern Physics	3	EE 161 Electronics and Signals	3
	17		17

Senior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Δ*Social Science, History, or Humanities	3	Δ*Social Science, History, or Humanities	3
EE 162 Electromechanical Energy Conversion	2	EE 167 Design Colloquium	2
EE 163 Physical Electronics	3	ΔEE Elective	3
EE 164 Electromagnetic Fields and Waves	3	ΔEE Elective	3
ΔEE Elective	3	ΔApproved Elective	3
ΔApproved Elective	3	ΔApproved Elective	3
	17		17

ΔPart of a planned program of electives to be chosen in consultation with the Adviser.

*Common-Core Courses.

First Graduate Year

The Master of Science program is planned as the fifth year of a five-year sequence of studies. Admission to the Master's program follows completion of the requirements for the Bachelor of Science in Engineering degree (at Duke University), or its equivalent (from another institution), and is contingent upon admission to the Graduate School of Arts and Sciences.

First Semester	*units*	*Second Semester*	*units*
EE200- or 300-level course	3	EE200- or 300-level course	3
EE200- or 300-level course	3	EE200- or 300-level course	3
†Minor course	3	†Minor course	3
Approved elective course	3	Approved elective course	3
Thesis research	3	Thesis research	3
	15		15

Subsequent Graduate Study

For further information concerning work leading to the M.S. degree, as well as that leading to the Ph.D. degree, refer to the sections of this *Bulletin,* beginning on pages 54 and 75.

Department of Mechanical Engineering

The mechanical engineer is concerned with the design, control, and fabrication of machines for the production of useful energy or the processing of materials. He must lead in the development of new sources of power, propulsion, and transport. Included are the familiar internal combustion engine, steam turbine, nuclear reactors, and jet engines in use today, as well as fuel cells, thermionic and thermoelectric energy conversion, magnetohydrodynamic power, ion and plasma engines, and other new energy systems not yet known. The exploration of outer space and the depths of the oceans present challenging new problems. Further, there is the all-important task of providing the technological requirements of an ever increasing population with its demands for new products in food, shelter, comfort, entertainment, and work saving devices.

The curriculum in mechanical engineering has been planned to bridge the gap between the basic sciences on the one hand and the machine or process to be developed on the other. It is intended to prepare the individual for a career in (1) research and development; (2) design; (3)

†Normally Mathematics or Natural Science.

production, manufacturing, and operation; and (4) technical management.

Digital Computer programming is introduced at the freshman level and computer problem solving incorporated into engineering course work throughout the curriculum. Programs are processed either at the Duke Computation Center or by teleprocessing from the engineering building to a large core storage computer at the Triangle Universities Computation Center. Elective courses in computer-aided design make use of both analog and digital computation facilities in the School of Engineering.

The department operates undergraduate laboratories for *measurements, materials development and processing, nuclear power, thermal and fluid systems, dynamic systems response and control,* and *senior projects.*

The *Measurements Laboratory* emphasizes selection of measurement systems and data analysis. Included are experience with transducers, analyzers, and recorders for measurements of force, speed, flow rate, temperature, velocity, energy, and sound.

The modern *Materials Laboratory* provides equipment for the preparation, testing, and microscopic examination of material samples over a broad range of conditions. Metals, polymers, and ceramics, as well as naturally occurring materials are included. Advanced project work uses such special equipment as ultrasonic generators, injection molders, heat treating furnaces, arc-melting furnace, etc.

In the *Thermal and Fluid Systems Laboratory* studies are conducted on such equipment as analog computers, heat exchangers, refrigeration compressors, a CFR engine, low-speed wind tunnel, hydraulic loops and a vacuum-propulsion system. Instrumentation includes a Mach-Zender interferometer, thermocouple data systems, engine indicators, constant-temperature anemometers, proximity probes, pressure transducers, flow meters, and associated analyzers and recorders. New additions will include a Mach 4 supersonic tunnel and radiation heat transfer equipment.

The *Dynamic Systems and Control Laboratory* permits study of dynamic response on a programmable electrodynamic shaker, shock stand, and with mechanical, magnetic, and acoustic exciters. Oscillators, narrow and broad band frequency generators, spectrum analyzers, filters, magnetic tape recorders, and other modern instrumentation provide the diagnostic means for vizualization, analysis and interpretation. Stability and response of automatic control systems are studied by analog computers and some real hardware systems, including an autopilot.

In the *Senior Projects Laboratory* the student defines the need for experimentation, designs his "model" and instruments to provide the desired data on an advanced project of his choosing. Oral and written presentation of the results are a vital part of the laboratory experience.

Program of Study in Mechanical Engineering for the Bachelor of Science in Engineering Degree

For *freshman* and *sophomore* years see page 8.

Junior Year

First Semester	s.h.	*Second Semester*	s.h.
Δ *Social Science, History, or Humanities	3	Δ *Social Science, History, or Humanities	3
*Egr 123 Dynamics	3	*Egr 113 Introductory Electric Systems II	3
*Egr 101 Thermodynamics	3	*Egr 133 Heat Transfer	2
*Egr 143 Fluid Mechanics	2	ΔApproved Elective	3
*Math elective beyond Math 111	3	ME 102 Thermo II	3
ME 133 Mechan. Design I	3	Phys 161 Modern Physics	3
	17		17

Senior Year

First Semester	s.h.	*Second Semester*	s.h.
Δ *Social Science, History, or Humanities	3	Δ *Social Science, History, or Humanities	3
†ME 122 Transport Phenomena	3	ME 161 Mech. Engrg. Lab.	2
ME 134 Mechanical Design II	2	ΔΔME Electives	6
ME 136 Response of Systems	3	ΔApproved Electives	6
ΔΔME Elective	3		17
ΔApproved Elective	3		
	17		

First Graduate Year

The Master of Science program is planned as the fifth year of a five-year sequence of studies. Admission to the Master's program follows completion of the requirements for the Bachelor of Science in Engineering degree (at Duke University), or its equivalent (from another institu-

ΔPart of a planned program of electives to be chosen in consultation with the Adviser.

*Common-Core Courses.

†With approval of the adviser, Egr 163 (Fields) or ME 226 (Intermediate Fluid Mechanics) may be substituted for ME 122.

ΔΔThree of the nine s.h. of ME electives must be design oriented. A current listing of design-oriented courses is maintained by the department.

tion), and is contingent upon admission to the Graduate School of Arts and Sciences.

First Semester	*units*
ME 200- or 300-level course	3
ME 200- or 300-level course	3
†Minor course	3
Approved elective course	3
Thesis research	3
	15

Second Semester	*units*
ME 200- or 300-level course	3
ME 200- or 300-level course	3
†Minor course	3
Approved elective course	3
Thesis research	3
	15

Subsequent Graduate Study

For further information concerning work leading to the M.S. degree, as well as that leading to the Ph.D. degree, refer to the sections of this *Bulletin* beginning on pages 54 and 83.

Interdisciplinary Undergraduate Major

This major parallels the majors in civil, electrical, and mechanical engineering and, subject to faculty approval, is offered in selected areas such as biomedical engineering, engineering mechanics, energy conversion, materials, and systems and controls.

The following requirements govern the interdisciplinary major:

1. The program shall meet the requirements of the Bachelor of Science in Engineering degree as outlined on pages 6-8, and shall in addition contain the requirements:
   (*a*) A minimum of 16 s.h. of engineering course work in addition to common-core courses must be taken in the third and fourth years, of which 6 s.h. must be design-oriented studies.
   (*b*) Limitation shall be placed on the amount of work which can be taken in a given department during the third and fourth years so that the advantages of interdisciplinary studies may be realized.
2. Each student enrolled in an approved interdisciplinary program shall be assigned to an appropriate engineering department for administrative purposes.

Division of Biomedical Engineering

Biomedical engineering is often defined as the application of the concepts and methods of the physical, mathematical, and engineering

†Normally Mathematics or Natural Science.

sciences to biology and medicine. This definition covers a very broad spectrum ranging from formalized mathematical theory through experimental science to practical clinical applications. The purpose of the undergraduate program in biomedical engineering is to permit engineering undergraduate students who plan to dedicate their professional careers to the biomedical area to prepare themselves adequately for graduate work in biomedical engineering, medicine, or biology. This program is flexible and statisfies the requirements for entrance to either graduate work in biomedical engineering or medical schools.

Program of Study in Biomedical Engineering for the Bachelor of Science in Engineering Degree

For *freshman* and *sophomore* years see page 8.

Junior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
ΔSocial Science, History, or Humanities	3	ΔSocial Science, History, or Humanities	3
*Egr 113—Intro. Electric Systems II	3	*Egr 123—Dynamics	3
Math 112—Appl. Math. Analysis II	3	Egr 101—Thermodynamics	3
Chem 151—Organic Chem	4	Chem 152—Organic Chem.	4
Biology 1—General Biology	4	Biology 2—General Biology	4
	17		17

Senior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
ΔSocial Science, History, or Humanities	3	ΔSocial Science, History, or Humanities	3
*Phys 161—Modern Physics	3	*Egr 163—Fields	3
*Egr 133—Heat Transfer	2	*Egr 143—Fluid Mechanics	2
Egr Elective	3	Egr Elective	3
Egr Elective	3	Egr Elective	3
Δ**Elective	3	Δ**Elective	3
	17		17

ΔPart of a planned program of electives to be chosen in consultation with the Adviser.

*These courses may be interchanged in any manner that maintains 17 s.h. per semester.

**It is recommended that students utilize these electives to strengthen their biomedical competence.

Graduate Degrees Offered

Through the Graduate School of Arts and Sciences the School of Engineering offers work leading to the degree of Master of Science (M.S.) and to the Doctor of Philosophy (Ph.D.) degree with a major in civil, electrical, or mechanical engineering.

Master of Science and Doctor of Philosophy Degrees with a Major in Engineering

Students with superior undergraduate, or introductory graduate, preparation in appropriate fields may participate in graduate study programs in engineering leading to the degrees of Master of Science and Doctor of Philosophy. The Master's degree requires successful completion of a minimum of 30 units of graduate work: 12 in engineering, 6 in related minor work, 6 in either the major or minor field or a relevant third field, and 6 for a research-based thesis. The doctorate requires, beyond the Bachelor's degree, twice as many units of credit in each category as does the Master's degree, and, in addition, a reading knowledge of two foreign languages which are relevant to the field of the dissertation (normally two of the following: French, German, or Russian; foreign students may elect English as one of the required languages). Whereas the Master's thesis is expected to show the candidate's ability to conduct individual research, the doctoral dissertation is expected to demonstrate his ability to complete in a superior way a program of independent and original research. Each graduate student participates in seminars which are appropriate to his area of specialization.

Programs of Study in Civil Engineering for the Degrees of Master of Science and Doctor of Philosophy

Programs of advanced study, research, and design are available in six major areas: *engineering mechanics, structural engineering, soil mechanics and foundation engineering, hydraulic engineering, materials science and engineering,* and *sanitary engineering.* The Department also participates in two interdisciplinary programs of graduate instruction and research; these are *biomedical engineering* and *ocean engineering.*

Since the programs in most of these areas are interrelated with those offered in other engineering and science departments at the University, the Duke engineering curriculum offers a high degree of flexibility in individual study programs. Appropriate combinations of the major areas mentioned with other areas of study are encouraged. Both science-oriented and engineering-design-oriented activities can be selected to accommodate a wide range of student interests. For instance, there are

interdisciplinary programs now available in biomedical engineering and in materials science and engineering.

The graduate programs, as well as research and design activities, are planned to prepare advanced students for positions of leadership in the civil engineering profession.

A minimum prerequisite to the graduate program in civil engineering is a basic knowledge of mathematics through linear differential equations, materials science, solid mechanics, and fluid mechanics.

Programs of Study in Electrical Engineering for the Degrees of Master of Science and Doctor of Philosophy

The Department of Electrical Engineering is currently engaged in an extensive program of graduate instruction and research relating to man and his environment. More specifically, this program is concerned with four major technical areas: (1) *fields and materials*, the mutual interaction of which is exploited in devices and systems; (2) *the processing and transmitting of information*, as in television, radar, telemetry, measurement, electronics, computation, and control; (3) *the processing, transmitting, and controlling of energy*, as in solid-state converters, nuclear reactors, rotating machines, power systems, and automatic industrial processes; (4) interdisciplinary activities, as exemplified by *biomedical engineering*. Direction and impetus for the program derive both from the interests of students and faculty and from the needs of industry and of government agencies. The production both of significant new knowledge and techniques and of highly qualified new researchers and practitioners is the goal of the graduate program in electrical engineering at Duke.

A minimum prerequisite to the graduate courses in electrical engineering is a basic knowledge of differential equations, electric and magnetic field theory, and the theory of networks. A previous course in modern physics is recommended.

Programs of Study in Mechanical Engineering for the Degrees of Master of Science and Doctor of Philosophy

The Department of Mechanical Engineering is engaged in a program of instruction and research directed toward the more effective generation, use, and control of power through the application of scientific and engineering knowledge of materials, mechanics, and energy transfer. At the graduate level emphasis is placed on advanced study, research, and design in three primary areas of *thermal and fluid systems, design and control of machines and processes,* and *development of materials.* Included are experimental and theoretical studies of heat and mass transfer, thermodynamics, fluid mechanics, vibrations, dynamics of physical systems and machinery, automatic control, power generation, propulsion,

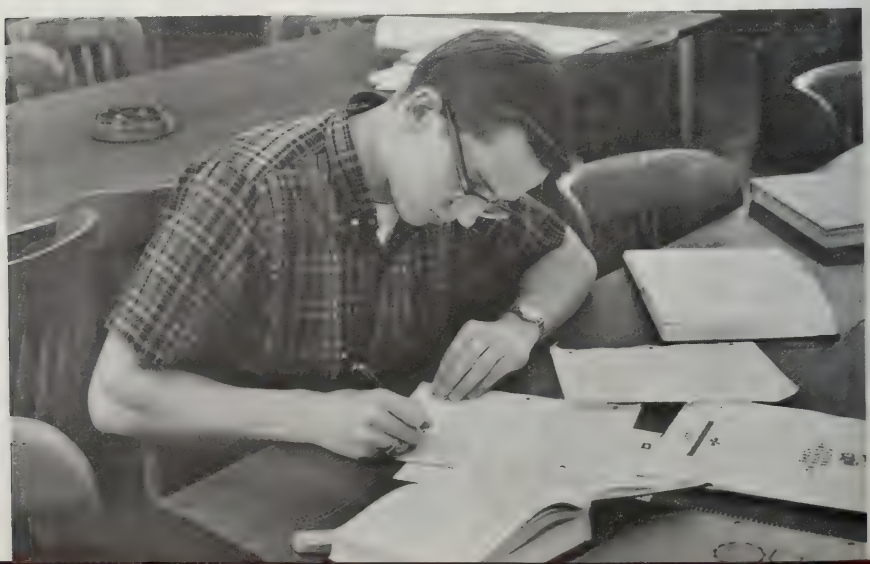
refrigeration and cryogenics, nuclear engineering, machine design, and the structure and forming of materials including metals, polymers, and ceramics.

Cooperating with the Division of Biomedical Engineering (a joint division of the School of Engineering and Duke Medical Center), the department conducts research in biomechanics, biomaterials, and thermal, fluid, and mass transfer problems in biological systems. Other interdisciplinary research programs are starting in oceanographic engineering, interaction of fields and materials, transportation engineering, and signal processing and communications. Involvement with various cooperating departments and schools at Duke University is one of the goals for graduate students involved in these interdisciplinary programs. Increasing emphasis is placed on the development of creative abilities of graduate students, and on relating the research to the needs of an era of exploding population and technical progress.

A minimum prerequisite to the graduate courses in mechanical engineering is a knowledge of solid and fluid mechanics, energy processes, materials science, and advanced engineering mathematics.

Programs of Study in Biomedical Engineering for the Degrees of Master of Science and Doctor of Philosophy

An interdisciplinary program in biomedical engineering leading to the M.S. and Ph.D. degrees is offered. Students presently write their theses and take their degrees in one of the engineering departments or physiology. The purpose of this program is to encourage the optimum combining of engineering and biomedical course work with an interdisciplinary research topic so that the graduates of this program can contribute at the most advanced professional level to the interdisciplinary field of biomedical engineering. The major research areas available include: biomechanics, biomedical materials, quantitative diagnosis, data acquisition and processing, and electrophysiology.



Undergraduate Special and Cooperative Programs

Reserve Officers Training Corps

Through the Naval and Air Force Reserve Officers Training programs the University is cooperating with the Department of Defense in providing well-educated officers for the active and reserve forces of the nation.

The Naval Reserve Officers Training Corps

There are two basic programs through which students can qualify for Naval commissions upon graduation: one, the Regular Naval Reserve Officers Training Corps program, provides a maximum of four years in the University largely at government expense, followed by a commission in the regular Navy or Marine Corps; the other, the Contract program, leads to a commission in the Naval Reserve or the U. S. Marine Corps Reserve. Additional information may be found in the *Bulletin of Undergraduate Instruction.*

The Air Force Reserve Officers Training Corps

The unit functions as a regular department of instruction known as

the Department of Air Force Aerospace Studies. It selects, trains, and commissions college men who possess the requisite character, intelligence, desire, and sense of duty to become Air Force officers. Additional information may be found in the *Bulletin of Undergraduate Instruction.*

Advanced Placement Program

Course placement is accomplished on the basis of good performance on either the Advanced Placement Examinations of the CEEB or—to a more limited extent—on placement tests given by Duke during Freshman Week. The College Board Advanced Placement Examinations are a vehicle to courses on the sophomore level or higher placement in botany, chemistry, English, French, German, history, Latin, mathematics, physics, Spanish, and zoology, whereas the Duke tests are used to decide such placement only in foreign languages, biological science, and mathematics. A further distinction is that only the AP Examinations may lead to credit toward graduation for the course or courses omitted and waiver of *uniform course requirements.* The departmental directors of undergraduate study and the University Registrar are charged with the responsibility for evaluations leading to advanced placement of freshman matriculants.

Advanced Placement Examinations are given in May by the College Entrance Examination Board. Information regarding the tests may be obtained from the Board.

Study Abroad

A student contemplating study abroad should be guided by the provisions established by the Undergraduate Faculty Council and administered by the Committee on Study Abroad. For details, see *Bulletin of Undergraduate Instruction.*

Summer Study Abroad

Duke University, in cooperation with the Experiment in International Living, runs a summer program of study abroad in France, Germany, and Spain, open to all qualified Duke students. The program offers the opportunity to earn six to eight hours of academic credit. Participants are selected by the Committee on Study Abroad and the Experiment in International Living. Applications must be submitted before February 15 to qualify for a summer group.

Eligibility for Special Curricular Programs

Reading-out of Introductory Courses

The option to "read" in order to by-pass introductory or pre-requisite courses is open to students of demonstrated academic ability to allow them to advance at their own pace to upper-level work. This opportunity ensures a richer program for the student who has few places in his curriculum for electives. Any student interested in reading during the summer to by-pass an introductory or pre-requisite course must be recommended by his dean and secure the permission of the department concerned. Reading for a course and auditing are mutually exclusive procedures. A proposed program of reading should be approved by the Director of Undergraduate Studies in the department in which the work will be done. On passing a three-hour qualifying examination prepared by the department a student may be certified for advanced course work in the area. On completion of an advanced course, an entry will be made on his permanent record that he has passed a qualifying examination but no course credit is awarded. Interested students should request further information from the Dean's Office.

Independent Study

Upon recommendation of the department, a student may be permitted to enroll for independent study during his junior and/or senior years. A student need not be in a Graduation with Distinction program to enroll in independent study courses. The maximum credit allowed for independent study and honors research courses is three semester hours per semester during the junior year and six semester hours per semester during the senior year. Interested students should consult the Director of Undergraduate Studies in the department in which they wish to work.

Graduation with Distinction

Programs featuring independent study and other honors opportunities are available under the title Graduation with Distinction in all three departments. Although the details and requirements of the program vary from department to department, certain general requirements are uniform. Each department participating invites, at the end of their junior year, those students who have maintained at least a "B" average in the major field and an over-all average of "B" to enter the Graduation with Distinction Program. Upon recommendation of the department and with the permission of the Honors Committee, a student with an average slightly below "B" may be admitted to the Graduation with Distinction Program. However, he must achieve a "B" average in his major department and an



overall average of "B" by graduation to be eligible for Graduation with Distinction in his major field. After participation in a senior seminar, and/or a directed course of reading, laboratory research, or other independent study, the student must embody the results of his individual research and study in a distinguished piece of writing. The paper is assessed by a departmental committee which, if it approves, recommends that the student be Graduated with Distinction in his major field. Interested students should consult the Director of Undergraduate Studies in the appropriate department.

Reciprocal Agreement with the Consolidated University of North Carolina

Under a plan of cooperation between the Consolidated University of North Carolina and Duke University, students regularly enrolled at Duke University during the regular academic year, and paying full fees to that institution, may be admitted to a maximum of two approved courses per semester at the Consolidated University upon payment of a nominal registration fee of two dollars and of any other special fees regularly required of all students.

This privilege pertains to both undergraduate and graduate students.

Student Life

Living Accommodations

As the undergraduate units of the University are resident institutions, all students are required to live in the residence halls. Any exceptions must be approved by the Dean of Men or the Dean of Women. Rooms are not rented for a shorter period than one semester. No refund of room rent will be made except for involuntary withdrawal to enter the armed services. Such refunds are made in accordance with the University's established schedule. (See *Financial Information* for living expenses.)

*Housing**

Undergraduate Men. Upon their admission to the School of Engineering, men students are sent detailed information by the Office of Housing Management concerning their obligations under the housing contract. Certain houses are reserved for members of the freshman classes. Each of these units has a resident Head Housemaster and one or more Housemasters. A limited number of Freshmen reside in other houses where they live in community with upperclass students and a Fellow, a Faculty member or an advanced graduate student who serves as their adviser.

Undergraduate Women. Women students enrolled in engineering live in the residence houses of The Woman's College. (A section of the Grad-

*Information pertaining to residence halls and Duke University Apartments is subject to change prior to September, 1968.

uate Center, West Campus, is also reserved for undergraduate women.) These houses are alike in their organization. In each of them there is a resident House Counselor, who is a member of the Dean's staff, and full representation from all four classes, with the appropriate number of places reserved each year for freshmen.

Graduate Housing. Duke University strives to provide comfortable, attractive living facilities for resident students both married and unmarried.

Graduate Center is available to men enrolled on a full-time basis in the graduate or professional schools. The majority of rooms are occupied by two persons. A limited number of single rooms are available but are generally reserved by students who have been in residence the previous year.

Town House Apartments and a section of the Graduate Center are available to women enrolled in the graduate and professional schools.

Duke University Apartments are available for full-time graduate and professional students. The 224 units are complete with basic furnishings.

For details concerning living accommodations, see page 39 of this *Bulletin* or the *Bulletin of the Graduate School of Arts and Sciences.*

Dining Facilities

The dining facilities on the West Campus include two cafeterias, with multiple-choice menus, and the Oak Room where full meals and *a la carte* items are served. The dining halls in which all resident women have their meals are located in the Woman's College Union and in Gilbert-Addoms residence hall. Because of the large number served in the dining halls, it is not possible to arrange special diets for individual students. The Graduate Center has a cafeteria and a coffee lounge.

Services Available

Medical Care

The Student Health Program is closely related to the Teaching Hospital of the Duke University Medical Center. This arrangement provides an unusually comprehensive service, available at all times. The cost, for regularly enrolled students, is included in the general fee paid each semester and in the fees charged each student in the summer quarter.

For details concerning medical care, see the *Bulletin of Information and Regulations, Trinity College and the School of Engineering* or the *Bulletin of the Graduate School of Arts and Sciences.*

The Counseling Center

The University maintains a counseling center which provides educational, vocational, and personal counseling for students. The Center is the administrative agency for most of the national testing programs, including admissions tests for graduate and professional schools. A library of information on occupations, graduate training, and fellowships for graduate study is maintained.

The counseling and information services of the Center are free to Duke students. Additional information on the counseling, testing, and information services may be secured from the Duke University Counseling Center, 309 Flowers Building, Duke University, Durham, North Carolina, 27706.

Appointments Office

The Appointments Office is a service agency designed to aid students and alumni in obtaining both summer and post-college employment. Its primary function is to serve as an intermediary between students, alumni, and prospective employers. It directs attention to possibilities in business and professional fields, it assembles comprehensive records on each registrant and makes these records available to appropriate representatives, and it arranges interviews with prospective employers. The Office initiates contacts for students or cooperates with students who make contacts through personal efforts or through various departments of the University. It aids the registrant in directing his search to a field appropriate to his aptitude, training, and interest.

There are two major divisions of the Office: the Commercial Division, which handles all matters involving contacts with business and professional areas not related to formal education; and the Educational Division, which concerns itself with teaching and school administration positions at all levels. Seniors, graduate students, and alumni may register with either or both of these divisions.

The Office receives more calls for qualified personnel than it can supply from its registrants. It is to the mutual advantage of the students and the Office that a complete record of registrants be assembled by the fall of the senior year or, in the case of graduate students, by the fall preceding the year during which they will seek employment.

Organizations and Activities

Engineers' Student Government

The Engineers' Student Council, composed of approximately 14 members from the various organizations and classes in the engineering

student body, coordinates the activities of all student organizations in the School. The Council acts to represent the interests of the students in their relationships with the public, the faculty, and the administration. The Council is responsible for such activities as the Engineers Show, homecoming displays, supervision of the student Lounge, social events, and the Engineers Guidance Council.

Engineering Student Publication

The DukEngineer, official student-published magazine of the School, which appears twice each semester, contains articles on technical and semi-technical topics and other matters of interest in the School.

Engineers' Radio Association

Membership in the Engineers' Radio Association is open to all students of the School who have an interest in amateur radio. The Association operates amateur radio station W4AHY and conducts code and theory classes for members who desire to obtain a Federal Communications Commission license.

General Activities Open to Engineers

As part of the University Community, students in the engineering programs share in all activities open to students.

Student Branches of Engineering Professional Societies

The three Departments of the School support student branches of the following national professional engineering societies: *American Society of Civil Engineers, American Society of Mechanical Engineers, Institute of Electrical and Electronics Engineers.*

Engineering Guest Speaker Program

In addition to his participation in the student branches of the national professional engineering societies, the student has the opportunity of additional development through the *Engineering Guest Speaker Program.* The general function of the series is to provide stimulating lectures by outstanding members of the engineering profession.

Engineering Honor Societies

Tau Beta Pi. Engineering national honor society—Gamma Chapter of North Carolina.

Chi Epsilon. Civil engineering national honor society—Duke University Chapter.

Eta Kappa Nu. Electrical engineering national honor society—Delta Lambda Chapter.

Pi Tau Sigma. Mechanical engineering national honor society—Pi Iota Chapter.

Order of St. Patrick. Honor society recognizing leadership in engineering student activities.

General Honor Societies

In addition to the national engineering student honor societies, students of the School are eligible for membership in the national and local honor societies throughout the campus.

Engineering Awards and Prizes

The Tau Beta Pi Prize is awarded each year by North Carolina Gamma Chapter of Tau Beta Pi, engineering national honor society, to a sophomore student in engineering for outstanding scholastic achievement during the freshman year.

The Walter J. Seeley Scholastic Award is presented annually by the Engineers' Student Government to that member of the graduating class of the School who has achieved the highest scholastic average in all subjects, and who has shown diligence in pursuit of an engineering education. The award was initiated to honor the spirit of academic excellence and professional diligence demonstrated by Dean Emeritus Walter J. Seeley. The Council hopes that this award will serve as a symbol of the man and the ideals for which he stands. The name of the recipient is inscribed on a plaque displayed in the Engineering Building.

The Hamilton Watch Award is presented by the Hamilton Watch Company to the senior in Engineering who has most successfully combined proficiency in his major field of study with notable achievements in social sciences and humanities. The award is a Hamilton electric watch, appropriately engraved, accompanied by a letter of commendation to the recipient.

The American Society of Civil Engineers Prize is awarded annually by the North Carolina Chapter of the American Society of Civil Engineers to two outstanding seniors in Civil engineering, upon recommendation of the Faculty of the Civil Engineering Department. The basis for selection is the student's scholastic record, his contribution to the Student Chapter, and his participation in other college activities and organizations. The Prize consists of a Certificate of Award and the payment of one year's dues in the American Society of Civil Engineers.

The American Public Works Association Prize is awarded annually by the North Carolina Section to an outstanding senior in Civil Engineering

upon the recommendation of the faculty of the Civil Engineering Department. The basis for selection is the student's scholastic record and his interest in a career in public works. The Prize consists of a Certificate of Award, one year's payment of dues in the American Public Works Association, and a $25 cash award.

The George Sherrerd III Memorial Award in Electrical Engineering is awarded annually to that senior student in electrical engineering who, in the opinion of the Electrical Engineering Faculty, has attained the highest level of scholastic achievement in all subjects and simultaneously has rendered significant service to the School of Engineering and the University at large. The Award was established in 1958 by the parents of George Sherrerd, III, a graduate of the Class of 1955, to recognize outstanding undergraduate scholarship. The recipient receives a monetary award and his name is inscribed on a plaque displayed in the Engineering Building.

The Charles Ernest Seager Memorial Award recognizes outstanding achievement in the annual Student Prize Paper Contest of the Duke Branch of the Institute of Electrical and Electronics Engineers. The Award, established in 1958 by the widow and friends of Charles Ernest Seager, a graduate of the Class of 1955, consists of inscribing the name of the contest winner on a plaque displayed in the Engineering Building.

The Milmow Prize is awarded annually to the student from North or South Carolina graduating in the Department of Electrical Engineering who, in the opinion of the Faculty of that Department and, as shown by his grades, has made the most progress in electrical engineering during his last year in School. The prize consists of a Certificate of Award and one year's payment of dues in the Institute of Electrical and Electronics Engineers for the membership year in which the honoree is awarded his baccalaureate degree.

The American Society of Mechanical Engineers Award is presented annually to a senior in mechanical engineering for his outstanding efforts and accomplishments in behalf of the American Society of Mechanical Engineers Student Section at Duke. The Award consists of a Certificate of Recognition.

The T. C. Heyward Award is given annually to the outstanding Mechanical Engineering Sophomore by Pi Tau Sigma. The Award will normally consist of a handbook as well as a small cash award.

The Machinery Magazine Award is presented annually by The Industrial Press, publisher of the magazine, to the outstanding student in machine design in the graduating class. The Award consists of a copy of the latest edition of *Machinery's Handbook*.

Admission

Undergraduate

New students are admitted for the academic year at the opening of school in the fall.

Because enrollment is limited, the Committee on Admissions selects those students who in its judgment are best qualified to benefit from the opportunities which the School offers. Selection is based not only upon academic grades and test scores but also upon recommendations of school officials and other personal criteria.

Requirements

Although there are no inflexible subject matter requirements, at least 15 acceptable units of secondary school credit must be presented. Of these at least 12 must be in college preparatory subjects: English, foreign language, history and social studies, mathematics, and physical or biological sciences. Applicants for the School of Engineering are advised to present four units of mathematics and at least one unit in physics or chemistry.

Students applying for admission are required to take the Scholastic Aptitude Test, the English Composition test, and two other achievement tests of their own choosing given by the College Entrance Examination

Board. Candidates applying to the School of Engineering must include the appropriate mathematics test.

Prospective students are urged to broaden their reading outside of class during their senior year and to make the acquaintance of books and magazines that do not form part of the subject matter of their courses. At the same time, they should take every opportunity to increase their competence in writing. Those who cannot write simple, clear, grammatical English prose will be progressively at a serious disadvantage in the competition for admission and also in the general work of the freshman year. Careful attention to correct English in correspondence and on application blanks cannot be too seriously stressed for candidates for admission.

Early Decision Plan

For the well-qualified student who has definitely decided to enter Duke if accepted, the University offers to reserve a place by "early decision" on December 1 of the student's senior year in secondary school. The deadline date for completing applications for Early Decision is November 1. Interested students should write to the Office of Admissions for detailed information.

Regular Admission

Candidates for regular admission must apply no later than January 15, and normally do so during the fall of the senior year. For this group, decisions are mailed by April 15.

Application forms and instructions regarding procedure and necessary documents to be included will be sent upon request to the Office of Admissions, Duke University, Durham, North Carolina, 27706. A nonrefundable processing fee of $10.00 must accompany the submission of the full application form.

A candidate for admission who wishes to arrange an interview should do so through the Director of Undergraduate Admissions.

Admission to Advanced Standing

Admission by transfer from other institutions may be arranged for a number of students under certain well-defined regulations. All such candidates must submit official transcripts of all work completed at other colleges, accompanied by a statement of honorable dismissal and scores on the Scholastic Aptitude Test of the College Entrance Examination Board. Courses on which a grade less than C has been earned cannot be accepted for transfer credit. Students may not apply for transfer beyond admission to the junior class. Further detailed regulations for admission by transfer may be obtained from the Office of Admissions.

A small number of special students of mature age may be admitted for such courses of instruction as their earlier training and experience may qualify them to take. They may not be accepted, however, as candidates for a degree in a regular course unless they are able to meet all normal requirements for admission which apply to all beginning students.

Readmission of Former Students

A student who desires to return, following withdrawal from the University should apply to the Director of Undergraduate Admissions. He will be asked to send a detailed statement of his activities since withdrawal. If practicable, the student should arrange for an interview with the appropriate Dean of the School.

Graduate

Prerequisites

A student seeking admission to the Graduate School of Arts and Sciences of Duke University with a major in engineering must have received a Bachelor's degree from an accredited institution. His undergraduate program should be well rounded and of such quality as to give positive evidence of capacity for graduate study. Normally he should have majored in the area of his intended graduate study. The three Departments of Engineering list specific prerequisites in the section of this Bulletin entitled "Graduate Degrees Offered."

Students Requiring Admission

Admission is required of (1) all students who intend to pursue study toward a degree offered by the Graduate School, (2) all other students who desire credit for whatever purpose for graduate courses—except students who register as Special Students in the Summer Session. Students who have discontinued a program of study after earning a master's degree here must by letter request permission of the Dean of the Graduate School to undertake a doctoral program. Members of the Duke University faculty will be granted only Non-Degree Admission.

Procedure for all Applicants

A student seeking admission to the Graduate School should request the Dean of the Graduate School to send an application blank. This he should fill out completely and return promptly. In addition he should provide the following supporting documents: (1) a transcript or transcripts of all his

undergraduate and graduate work mailed directly by the Registrar to the Dean; (2) as soon as possible, supplementary transcripts showing completion of work in progress when the earlier transcript was made; (3) three letters of recommendation written by persons best qualified to judge him as a prospective graduate student and mailed directly to the Dean; and (4) scores on the Graduate Record Examination (recommended for all applicants and required of applicants for fellowships) and Miller Analogies Test (recommended for all applicants).

All applicants except foreign students applying from outside the United States and non-degree students must include an application fee of $5.00 in check or money order payable to Duke University.

Additional Procedure for Foreign Students. Fully qualified students from outside the United States are welcomed in the Graduate School to take courses and in many instances to study toward a degree. In addition to the information required of all students, the foreign student should submit with his application for admission certain special information, as outlined in the *Bulletin of the Graduate School of Arts and Sciences.*

Closing Dates for Applications

Because applications cannot be reviewed until all required supporting documents are filed, applications for admission to the Graduate School of Arts and Sciences should be submitted at least *two weeks* before the closing dates listed below:

Fall semester, admission and award	February 15
Fall semester, admission only	August 1
Spring semester, admission only	January 1
Summer Session,* First Term	May 12
Summer Session,* Second Term	June 20

Notification of Admission

When admission to the Graduate School is approved, the student will receive a letter of admission and an acceptance form. The process of admission is not complete until the statement of acceptance has been returned. (For a more complete discussion of admission status, refer to the *Bulletin of the Graduate School of Arts and Sciences.*

*Students seeking admission to the Summer Session should make application to the Dean of the Graduate School as well as to the Director of the Summer Session.

Financial Information

Undergraduate Fees and Expenses

Fees paid by the students cover only a part of the cost of their instruction and of the operations of the University. Income from endowment and contributions from the alumni, alumnae, and other public-spirited men and women meet the balance, which constitutes more than half the total cost.

Estimated Expenses for an Academic Year

Certain basic expenditures are to be considered in preparing a student's budget, such as tuition, the general fee, room and board. These necessary expenditures together with a reasonable amount allotted for miscellaneous items such as books and supplies are shown below:

	Men	*Women*
Tuition	$1,600.00	$1,600.00
General Fee	200.00	200.00
Room Rent (Double Room)	335.00	360.00
Board	* 600.00	† 500.00
Books and Supplies	120.00	120.00

*Cafeteria estimate. †Board rate.

It should be realized that additional expenses will be incurred which will depend to a large extent upon the tastes and habits of the individual. It is realistic to suggest that the average Duke student, however, can plan on a budget of $3,300.00 for the academic year. Travel costs, clothing purchases, and other major expenditures would have to be added to this estimate.

Debts

No records are released and no student is considered by the faculty as a candidate for graduation until he has settled with the Bursar for all indebtedness.

Bills may be sent to parents or guardians provided the Bursar has been requested in writing to do so. Failure to pay bills on or before the due dates will debar the student from class attendance until the account is settled in full.

Tuition and Fees

Tuition and General Fee. The tuition of $800.00 and the general fee of $100.00 are due and payable not later than the day of registration for a particular semester. After the day of registration no refund of the tuition or the general fee will be made except for involuntary withdrawal to enter the armed services.

Registration Fees and Deposit. New students, on notification of acceptance, are required to pay a non-refundable first registration fee of $20.00 and to make a deposit of $50.00. The deposit will not be refunded to accepted applicants who fail to matriculate. For those who do matriculate, $25.00 of the deposit serves as a continuing room deposit for successive semesters, and the remaining $25.00 serves as a continuing registration deposit. Arrangements for refund of the $25.00 room deposit are described in information furnished each resident student by the Office of Housing Management.

Readmission. Students who have been readmitted to the University after an absence of one or more semesters, on notification of readmission, are required to make the $50.00 room and registration deposit.

Late Registration. Students who register in either semester at a date later than that prescribed in the Calendar of the School must pay to the Bursar a fee of $5.00.

Refunds. The $25.00 pre-registration deposit will be refunded to students (1) whom the University does not permit to return, (2) who graduate, or (3) who request the refund at the time of pre-registration, thus indicating their intention not to return for the following semester. The pre-registration deposit will not be refunded to students who pre-register and fail to enter the following semester on schedule.

ROTC Deposit. An Air Force ROTC deposit of $20.00 is required of students enrolling in Air Science to cover possible loss of military equipment issued to them. This deposit is refunded to the student upon return of issued equipment.

Fees for Special Students. In the regular academic year students who register for no more than two courses with a maximum credit of eight semester hours are classified as special students. They are charged a registration fee of $5.00 for each course and $55.00 for each semester hour of course credit. Registration for nine or more semester hours, or three or more courses, requires payment of full fees.

Fees for Auditing. Auditing of one or more courses without charge is allowed students paying full fees, provided that the consent of the instructor is obtained. Students who are enrolled for not less than three nor more than eight semester hours may audit other courses by payment of $27.50 for each course audited.

Fees for Duke Employees. In order to encourage its employees in their professional and personal advancement, Duke University will permit full-time employees who are paid on a monthly basis for two or more years to take one or two courses, but not more than seven semester hours and will charge $5.00 per course plus $27.50 per semester hour. Courses may not be audited unless at least one course is taken for credit.

Fees for Transcripts. Requests for transcripts should be directed to the Office of the Registrar. Ten days should be allowed for processing. One transcript is issued free of charge. Additional copies are supplied at $1.00 each.

Fees for Course Changes. Changes in courses for reasons not arising within the University require a payment of $1.00 for each change made. No course may be elected later than one week after the opening of the semester, and no student may be admitted to any class without an official enrollment.

Living Expenses

Housing. In the residence houses for undergraduate men, the rental charge for a single room is $445.00 for the academic year or $222.50 for each semester; for a double room the charge is $335.00 for each occupant, or $167.50 per semester for each occupant. Rental rates in the air-conditioned dormitories are $500.00 for a single room for the academic year, or $250.00 for each semester; for a double room the charge is $375.00 for each occupant, or $187.50 per semester for each occupant. Information concerning the student's obligations under the housing contract is published in the *Bulletin of Information and Regulations, Trinity College and the School of Engineering.*

In the residential units of the Woman's College the rental charge for a single room is $480.00 for the academic year or $240.00 for each semester. The rental charge for a double room is $360.00 for each occupant, or $180.00 per semester for each occupant. Detailed information concerning the student's obligations under the housing contract is published in the Woman's College Handbook.

Food Services. The dining facilities on the West Campus include two cafeterias, with multiple-choice menus, and the Oak Room where full meals and *a la carte* items are served. The cost for the academic year will approximate $600.00 but will vary from this amount depending upon the individual.

The dining halls in which all resident women have their meals are located in the Woman's College Union and in Gilbert-Addoms residence hall. The charge for board is $250.00 per semester, payable at the time of registration.

Graduate Fees and Expenses

The following table shows the general fees and charges collected from all graduate students. All fees for each semester are due and payable, unless otherwise specified, at the time of registration for that semester. All fees are subject to change without notice. No student is admitted to classes until arrangements have been made with the Bursar of the University for the settlement of fees.

Tuition and general fees* per semester (47.00 per unit)	$705.00
Athletic Fee, not including federal tax, optional, per year, payable in the fall semester	15.00
Binding fee, three copies of thesis or dissertation, other copies optional, $5.00 a copy	15.00
ETS Foreign Language Test, each administration, payable to the University Counseling Center	8.00
In absentia fee, due on date of registration one unit per semester	47.00
Late registration fee	5.00
Microfilming fee, doctoral degree only, upon final submission of dissertation	25.00

Housing (See detailed statement, *Bulletin of Graduate School of Arts and Sciences.*)

Tuition and fees for a full semester program of 15 units amount to $705.00. For a part program, tuition and fees are computed at the rate of $47.00 per unit.

*General fees, in lieu of most special charges, include the following fees: Matriculation, Medical, Library, Damage, Commencement, Diploma, and an average of the Laboratory and Material Fees.

Undergraduate Financial Aid

Duke University is interested in students with ability and ambition. It is the aim of the University Financial Aid Committee and others affiliated with the Financial Aid Program to provide, insofar as possible, the financial assistance required by students accepted for entrance who are unable to defray the cost of college from their own resources. The assistance is made available in the form of scholarships, grants-in-aid, loans, and part-time employment.

In 1967-68 financial aid totaled $1,638,000.00. Of this amount $996,648.00 was allotted to 1,191 undergraduate students in the form of scholarships, grants-in-aid, and remissions of tuition; $241,700.00 in student loans, and approximately $400,000.00 through part-time employment on the campus and in the city of Durham and the surrounding area.

Freshmen students shared proportionately in this aid: 352 received awards totaling $363,937.00 in direct assistance not including loans or part-time employment. Loans were made to 136 students totaling $69,850.00 in addition to other assistance received from Duke University.

Scholarships

All undergraduate requests for application forms for scholarships, grants-in-aid, industry scholarships, or remission of tuition should be addressed to the Office of Admissions, Duke University, Durham, North Carolina 27706.

All candidates for scholarships and grants-in-aid must submit an official Application for Admission to the University and the Application for Scholarship to the Office of Admissions. Scholarship candidates who desire to be considered for the maximum value of scholarships on the basis of financial circumstances are required to submit the "Parents' Confidential Statement" of the College Scholarship Service. The "Parents' Confidential Statement" may be obtained from high school principals or upon request from the Admissions Office.

Scholarship candidates should initiate their applications during the fall semester of their senior year of study in secondary schools. Instructions concerning the specific requirements and deadline dates will accompany the application materials sent to applicants for scholarships and grants-in-aid.

Awards annually available to all undergraduate students at Duke University are listed in the *Bulletin of Undergraduate Studies.*

Engineering Scholarships

Engineering Scholarship Fund was established by gifts of various persons, to be used for scholarship aid to engineering students.

Thomas R. Mullen, Jr., Scholastic Fund was established April 5, 1949, by gift of T. R. Mullen in memory of his son, the income to be used for scholarship assistance to students in the School of Engineering. Preference is to be given students who are children of employees of the Lehigh Structural Steel Company or others nominated by the Company. One award is available each year.

Jones Scholarship Fund was established in 1951 by Edwin L. Jones, Sr., '12; Annabel Lambeth Jones, '12; Edwin L. Jones, Jr., '48; Lucille Finch Jones; and the J. A. Jones Construction Company in memory of James Addison Jones and Raymond A. Jones; a portion of the income to be used for scholarship aid to worthy and qualified students in civil engineering.

Alcoa Scholarship in Engineering was established in 1962 by the Alcoa Foundation. One award of $625.00 per year is made to a student preparing for a career in either electrical or mechanical engineering.

Western Electric Fund Scholarship was established in 1957 by gift of the Western Electric Fund; a scholarship in the amount of $800.00 is given annually to an outstanding student in the field of electrical engineering who has completed the sophomore year of study.

Union Bag-Camp Corporation Scholarship was established in 1957 by gift of the Union Bag-Camp Corporation to provide a scholarship of $600.00 to a student in the fields of chemistry or mechanical engineering in alternate years.

Collier Cobb Associates Scholarship provides an award of $1,000 for the support of one or two worthy and needy students at the junior or senior level in the School of Engineering. The Program was established in 1967 by Collier Cobb and Associates, Inc.

Duke University participates in several other industry scholarship programs. Several of these awards for which freshmen may apply are assigned to engineering students annually although they are not restricted to students in this field of study. Among the available awards are the General Motors Scholarships and the Texas Company Scholarships.

Tuition Grants

Tuition grants are available to children of certain qualified staff members of Duke University for a maximum of eight semesters of undergraduate study at Duke.

Loans

Loan funds held in trust by the University as well as funds supplied by the federal government through the National Defense Education Act of 1958 are available to qualified students. Freshmen as well as upperclassmen are eligible to apply for a student loan.

For details concerning loans, see the *Bulletin of Undergraduate Instruction.*

The Student Loan Committee in approving loan applications selects those students who from the standpoint of character, scholastic attainment, personality, and degree of financial need deserve assistance.

Employment Opportunities

The Financial Aid Office maintains an employment office to serve students who need part-time jobs. There are many opportunities both on the campus and in the city of Durham. A considerable number of students each year help defray their college expenses by working.

Those students accepted for admission to the School of Engineering in need of part-time employment should apply to Financial Aid Office, Duke University, Durham, North Carolina 27706. Women students who need and qualify for part-time campus employment should apply to the Assistant Dean of Undergraduate Women, 111 East Duke Building, Duke University, Durham, North Carolina 27708.

Graduate Financial Aid

Awards through the Graduate School of Arts and Sciences

For the encouragement and financial assistance of graduate students of marked ability, Duke University has established a considerable number of fellowships, scholarships, and assistantships. The stipends for these range up to $4,000 for the academic year. Holders of grants pay tuition and other fees regularly required of all graduate students.

Fellows and scholars pay full tuition and fees and are expected to register for a full schedule of course work each semester. In general, assistants register for a four-fifths program and pay 12 units tuition and fees per semester.

Application for these awards, along with all supporting documents, must be submitted on or before February 15. Notification may normally be expected by late March. Late applications will be considered, should any vacancies occur in the list of appointees. No appointment is made for longer than one academic year.

Further information and application forms may be obtained from the Dean of the Graduate School, Duke University, Durham, N. C., 27706.

Special Fees for Teachers and Others

The Graduate School recognizes a special obligation to encourage the following types of students in their professional and personal advance-

ment: (1) members of the faculties of the neighboring public schools and colleges, currently engaged in *full-time* teaching while taking courses in the Graduate School, (2) ministers of neighboring churches, (3) wives of Duke faculty members, (4) *full-time* employees of Duke University who are paid on a monthly basis throughout the year for two or more years.* The reduced fees do not apply to teachers and ministers while on leave of absence, nor to holders of fellowships, scholarships, or graduate and research assistantships, nor to part-time instructors.

Persons eligible for the reduced fee must meet the admission standards required of all graduate students and must be admitted to the Graduate School. They may enroll for one or two courses per semester (in no case totaling more than 7 units) upon the payment of a fee of $5.00 for registration for each semester and a tuition fee of $25.00 per unit of credit or an audit fee of $25.00 per course.

Awards through the School of Engineering

The School of Engineering and its component departments are able to offer appointments as teaching and research assistants to graduate students in engineering. Stipends range up to $3,400 for the academic year.

Further information concerning these appointments and procedures for making application may be obtained from the Associate Dean for Graduate Study and Research, School of Engineering, Duke University, Durham, N. C., 27706.

Stipends and Income Tax

Ordinarily stipends awarded under fellowships and scholarships are not subject to income tax and Social Security Tax. However, a portion of the award to graduate assistants may be subject to tax. The Graduate Office will supply detailed information.

*Members of the Duke University faculty will be granted only Non-Degree Admission to the Graduate School of Arts and Sciences.

University Registration and Regulations

Undergraduate Registration

Pre-registration

Each new student receives a copy of the *Academic Guide for Freshmen* and the *Bulletin of the School of Engineering* in the summer, and submits a trial course program for his first semester. All other students pre-register for a given semester in the fall or spring of the year on the basis of information and advising available to them. Evidence that the continuing pre–registration deposit of twenty-five dollars has been paid (see page 38 for detailed information) must be submitted at the time of spring pre–registration. A student's tentative course program is filed for permanent record in the Central Records Office after each pre–registration. He may complete his registration by mail. Students who pre–register in either semester at a date later than that specified in the calendar of the colleges are subject to a penalty of $5.00, payable to the Treasurer. Students who do not pre–register within an allotted time must be readmitted to the school by application to the Director of Admissions.

Semester Opening and Registration

Each pre–registered undergraduate student is required to return to the

University each semester on registration day and to report to his college office by 6 p.m. Ample time should be allowed since failure to report entails loss of the continuing registration deposit and of registration in each class for which one is pre–registered. An official enrollment is required for admission to any class.

After pre–registration course changes may be made on registration day or during the first week of classes. Changes in courses for reasons not arising within the University entail a fee of $1.00.

Undergraduate Academic Regulations

Course Requirements

During each semester of the regular academic year, the academic program of an undergraduate student normally consists of five or six courses totaling 15-17 semester hours, exclusive of physical education. A maximum program of 19 semester hours exclusive of physical education has also been fixed since the University is committed to quality work and education that is not exclusively course centered. No student is allowed to take fewer than 14 semester hours of work without special permission from the Dean or to take more than the normal load of work unless his average grade in the preceding semester is higher than a C.

Course Audit

With the consent of the instructor, a full-time, degree student is allowed to audit one or more courses in addition to the normal program. After the first week of classes in any semester, no student classified as an auditor in a particular course may take the course for credit, and no student taking a particular course for credit may change classification to an auditor. A student may not repeat for credit any course he has previously audited. Auditors submit no daily work, take no examinations, and receive no credit for courses.

Course Changes

New courses may not be elected later than one week after the opening of classes during the semester. Procedures for withdrawal from a course are determined by each of the undergraduate colleges, but in any instance permission of the Dean is required.

Attendance Regulations

The attendance regulations specifically place the responsibility for class attendance upon the individual student. *He is expected to attend classes*

regularly and punctually. A student should recognize that one of the most vital aspects of a residential college experience is attendance in the classroom and that the value of this academic experience cannot be fully measured by testing procedures alone.

The members of the student body are considered sufficiently mature to appreciate the necessity of regular attendance, to accept this personal responsibility, and to demonstrate the kind of self-discipline essential for such performance and, conversely, to recognize and accept the consequences of failure to attend. An instructor is privileged to refer to the Dean for suitable action students who in his opinion are causing their work or that of the class to suffer because of absences or latenesses.

Absences from tests and required classes due to illness will be excused when certified by a proper medical official. Absences due to authorized representation of the University may be excused. Officials in charge of groups representing the University are required to submit names of those persons to be excused to the Dean's office 48 hours in advance of the hour when their absences are to commence.

Leave of Absence

An upperclassman in good standing may apply in writing to his dean for approval to take a leave of absence. If granted, the leave will begin at the end of the semester in which application is made and will last for one or two semesters. While on leave a student must inform his dean before November 1 (for a fall leave) or April 1 (for a spring leave) of his intention to return for the next semester. A student failing to meet the deadline will be considered to have withdrawn from the University and will have to apply for readmission.

Regulations for Participation in Athletics and Other Activities

Members of the athletic teams or other students groups engaging in public representation of the University are expected to be carrying their current work satisfactorily. Students may be barred from participation in such representation if, in the opinion the Dean, they fail to meet this requirement.

Grading

Final grades on performance in academic work are sent to students and parents, or guardians, after the examinations at the end of each semester. In addition, six-weeks advisory grade reports for freshmen are mailed each semester. Grade symbols are as follows:

Passing. A, exceptional; B, superior; C, average; and D, low pass. A passing grade may be modified by a plus (+) or a minus (—).

Failing. A grade of F indicates that the student has failed the course and that to receive credit for the course he must reregister for the course and repeat the work in class.

Pass-Fail Option for Elective Courses. With the consent of the instructor, a third or fourth year student may choose to be graded on a pass-fail basis in one free elective course each semester. A student accepted on this basis completes all the work of the course but receives either a pass (P) or fail (U) grade in lieu of a standard grade. The credit hours earned apply only in the total cumulative average, as do transfer and Advanced Placement credits. For that reason they are weighted as "C's" toward the required senior "C" average. A pass grade may not subsequently be converted to a regular letter grade nor may the course be retaken on a regular credit basis. After the first week of classes in any semester, no student classified as pass-fail in a particular course may change to regular registration and no student in regular registration may change classification to pass-fail.

Absence from the final examination. In all cases in which the student is absent from a final examination he receives an X instead of a final grade. If he does not present an acceptable explanation for his absence to the Dean's office within 48 hours after the scheduled time for the examination, the X is converted to an F. If the absence is excused by the Dean, the student arranges with the Dean and the instructor for a make-up examination. An X not cleared by the end of the semester following the examination missed is converted to an F.

Incomplete work. If because of illness or other emergency a student's work in a course is incomplete, he may receive an I for the course instead of a final grade. Incomplete courses must be completed before the close of the succeeding semester; otherwise, the I is converted to an F and the course must be retaken if the student is to receive credit for it. In case a student whose work is incomplete is also absent from the final examination, he receives an X for the course.

Withdrawal. The letter W is used to indicate official withdrawal from a course. If a student drops a course without such permission, a grade of F is recorded for that course. If he drops with permission a course in which he is failing, the grade for that course is recorded as an F unless in the judgment of the Dean circumstances do not require this penalty but permit a notation of a W to indicate official withdrawal.

Credits

The unit of credit used is the semester hour, which signifies one class period a week throughout the semester. Two or three hours of laboratory work are equivalent to one hour of class work.

Seniors who at the beginning of a semester lack no more than nine hours for the fulfillment of the requirements for the B.S.E. degree may enroll, with permission of the Dean of the Graduate School, in graduate courses for a maximum total program of 15 semester hours.

Advanced Placement Course Credit

Any student who has earned a score of three or higher on an Advanced Placement examination of the CEEB and is approved for placement in a sophomore-level course or above may be considered for course credit in appropriate subjects. For those presenting scores of four or five the award of credit will be made automatically upon matriculation; for those presenting scores of three it will be determined with the approval of the University department concerned no earlier than at the end of the first semester. Course credit may be granted for one or two semesters in each subject area in which examination is offered in the Advanced Placement Program.

Transfer Credit

Transfer credit is evaluated from regionally accredited, degree-granting institutions. Courses taken away from Duke in which grades of less than C have been earned are not acceptable for transfer credit. Credit for work completed at other institutions will be determined in relation to the curriculum requirements of the college in which the student enrolls at Duke.

Credit for courses in science or language offered for advanced standing in any of the undergraduate colleges by a transfer student from a junior college will be evaluated by the departments concerned.

The maximum amount of credit acceptable from a junior college is 60 semester hours, exclusive of physical education. No credit is given for work completed by correspondence, and credit for no more than six semester hours is allowed for extension courses.

Residence Requirements

The final four semesters—or equivalent—of work must be earned in residence except in those instances in which a student has been approved to take his junior year abroad or been granted a leave of absence. For engineering students, 30 of these 60 semester hours must be from those normally taken in the senior year. Students who meet this requirement but who still lack six to eight semester hours in final fulfillment of requirements may take this work in another institution of approved standing, provided the course is approved by the Chairman of their major department and by the Dean.

Quality Points and Class Standing

An overall indication of the quality of student performance is provided by assigning quality points per semester hour of a course as follows:

Grade	*Quality Points*	*Grade*	*Quality Points*
A+	4.0	C+	2.3
A	4.0	C	2.0
A—	3.7	C—	1.7
B+	3.3	D+	1.3
B	3.0	D	1.0
B—	2.7	D—	1.0
		F	0

On the basis of these points there is maintained for engineering students a Duke cumulative average determined by dividing the number of quality points earned at Duke by the total number of hours carried (not semester hours passed) at Duke. No grade is entered on a student's permanent record in the case of transfer credit or Advanced Placement Program credit. All honors at Duke as well as continuation and graduation requirements are determined on the basis of the Duke cumulative average.

A student in the School of Engineering matriculating after September 1, 1965, must achieve at least the following for continuation from:

The first to the second year	18 s.h. credit and a q.p.r. of 1.30
The second to the third year	46 s.h. credit and a q.p.r. of 1.60
The third to the fourth year	74 s.h. credit and a q.p.r. of 1.70
The fourth to the fifth year (if needed)	102 s.h. credit and a q.p.r. of 1.80

Freshmen must also pass at least six semester hours of work in their first semester, three required courses in the second semester, and 18 semester hours in the first year; all other students must pass at least nine semester hours each semester. Physical education credits are excluded in each case.

Senior Class Privileges. Students who have completed 96 or more semester hours of work including certain specially designated junior courses are eligible for privileges normally accorded seniors.

Requirements for Graduation. For graduation from the School of Engineering, in addition to completion of an approved curriculum, a student matriculating after September 1, 1965, must meet at least the following minimum requirements: the completion of 134 semester hours; a cumulative q.p.r. of 1.90; and a q.p.r. of 2.0 in all work, as well as in all engineering work, taken after having attained senior standing.

Commencement

Degrees are awarded in June at commencement to those who have completed requirements at the end of either regular semester of the academic year. They are awarded at the end of the summer to students who complete degree requirements in a summer session.

Eligibility for Undergraduate Academic Honors

Dean's List

In recognition of academic achievement, students who earn an average quality point ratio of 3.0 or higher on a semester's work of not less than the minimum academic load are placed on the Dean's List.

Class Scholars

The five students in each combined undergraduate class of the University (including Trinity College, The Woman's College, and the School of Engineering) who achieve the highest quality point ratio on at least a normal course load for each academic year shall be designated Class Scholars.

Class Honors

To be eligible for Class Honors a student must earn, during the year, credit for at least the minimum academic load permitted by the college in which he is registered. Students in the freshman, sophomore, and junior classes who earn a 3.50 quality point ratio on all work for the year are eligible for Class Honors.

Graduation Honors

To be eligible for consideration for Graduation Honors a student must have completed in residence a minimum of ninety semester hours. Students who earn an average of at least a quality point ratio of 3.50 are recommended for a degree *magna cum laude*. Those who earn a quality point ratio of 3.75 are recommended for a degree *summa cum laude*.

Graduation with Departmental Distinction

Graduation with Distinction in Civil, Electrical, or Mechanical Engineering is awarded to the student who, in the opinion of the department

and of a special committee of the faculty, has demonstrated exceptional achievement in the area of his special interest.

Distinguished Professor Seminars

(See *Bulletin of Undergraduate Instruction* for description.)

Graduate Registration

The requirements regarding who must register are as follows: (1) All students who enter course work or residence for credit; (2) all students who have completed minimum requirements for an advanced degree, but continue to use the facilities of the University in their research; (3) all students in *in absentia* status; and (4) all students who wish merely to audit a course or courses.

Registration

After the applicant has received notification of his admission to the Graduate School of Arts and Sciences and has returned his statement of acceptance of admission, he may present himself for registration. During the registration periods, announced in the Bulletin, he first confers with the Director of Graduate Studies of his major department, who prepares and signs a course card, listing the course work to be taken during the semester. The student then presents this course card to registration officials, who enroll him officially in his courses. After his first registration period as a current student he will pre-register at the stated times for pre-registration. Failure to pre-register incurs the penalty for late registration. Former students who intend to register to resume a degree program must give the Department and the Dean notice of this intention two months before registration.

Late Registration

All students are expected to register or pre-register at the times stated in the Bulletin. Those registering late are subject to a late registration fee of $5.00.

Change of Registration

During the academic year within a period of fourteen days from the registration date students may change registration with the approval of the Director of Graduate Studies, if no reduction of fee is involved, and with the approval of the Dean if reduction of fee is involved. Thereafter during the first thirty days from the registration date the only permissible

change is dropping course-seminar registration and adding equivalent units of research, with the approval of the Director of Graduate Studies, the instructor of the course, and the Dean of the Graduate School of Arts and Sciences.

Normal Registration

A graduate student is designated as fully registered when he registers for the maximum credit his program requires. Required registration is set in consideration of the student's obligation to teach or assist and the stage he has reached in completion of degree requirements. In the *academic year* normal registration for the resident student who does not hold an appointment as a part-time instructor or assistant or does not engage in part-time work is 15 units a semester or 30 units an academic year. The normal registration for the student who holds such an appointment or undertakes such work is either 12 units or a minimum of 9, depending upon the number of hours a week he is required to devote to such duties.

The resident student in a terminal master's program carries a normal registration until he has met all requirements except for submitting his thesis. Thereafter, until submission of the thesis, he registers for 3 units a semester while in residence or, if he elects to go out of residence, for 1 unit *in absentia* each semester until the thesis is accepted.

The resident student engaged in a master's program which is not terminal but preparatory to a doctoral program registers as though he were a doctoral student.

The resident student in a doctoral program carries normal registration through the semester in which he passes the preliminary examination. If he remains in residence, he continues to register for a minimum of 3 units a semester until the dissertation is accepted. If, before or after passing the preliminary examination, he elects to go out of residence, he registers for 1 unit a semester *in absentia* in order to keep his program active.

It is necessary to be a fully registered student according to the regulations listed above (except when registered in absentia) in order to establish eligibility for library carrel and laboratory space, for student housing, for University and some outside loans, for Student Health service including the voluntary Walker plan coverage, and for reporting status for military duty.

The registration of 1 unit a semester in absentia provides occasional consultation with the thesis or dissertation supervisor. It may be waived for military duty or serious problems of health.

In the Summer Session 6 units a term is maximum registration. Students resident in the academic year who wish to continue study and use of University facilities including Summer Session Student Health during the summer must register for 1 unit in the first Summer Session term. This registration provides use of these facilities for both terms.

Regulations Governing Graduate Degrees

Work in the School of Engineering toward the degree of Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) is taken subject to the regulations of the Graduate School of Arts and Sciences, as well as those of the School of Engineering.

Master of Science

Prerequisites

The degree of Master of Science is offered with a major in the fields of civil, electrical, and mechanical engineering. As prerequisites to this degree the student must have earned from an accredited college the Bachelor of Science in Engineering degree, or its equivalent, and completed a minimum of 12 semester hours work in the major field.

Residence Requirements

Candidates for the Master of Science degree must spend, as a *minimum,* one full academic year, or its equivalent as defined by the Graduate School of Arts and Sciences, in residence at Duke University. If after completion of the 30-unit requirement the candidate remains in residence, he must register for a minimum of 3 units per semester.

A Master's candidate who in the academic year presents a thesis when not registered in residence will be charged 1 unit of residence for the semester in which the thesis is presented. (For regulations governing work taken or requirements completed during the Summer Session see the *Summer Session Bulletin.*)

Foreign Language

There is no foreign language requirement for this degree.

Major and Minor Subjects

The work for the Master of Science degree is designed to provide a broad foundation at the graduate level in the fields of civil, electrical, and mechanical engineering. The student must present acceptable grades for a minimum of 24 units of graduate courses: at least 12 in course work in his major area of concentration in engineering (not necessarily confined to the offerings of the engineering department in which the student is registered); a minimum of 6 units in a minor subject outside of engineering which lends broad support to his program (usually in the mathematical or natural sciences); and the remaining 6 of the 24-unit course requirement in either the major or minor subject, or in an area

approved by the major department and by the Dean of Engineering. In addition to the 24-unit course requirement, the student must present a thesis, which carries a credit of 6 units. Thus his earned credit for the degree totals a minimum of 30 units.

Candidacy for the Master of Science Degree

To be considered as a candidate for the Master of Science degree, the graduate student must (1) have made passing grades in all courses taken during the first period of residence (if he registers for fewer than 12 units of graduate courses during his first period of residence, he must make passing grades on the first 12 units of graduate courses), (2) have made a grade of G or E on at least 3 units of this work, and (3) have received the approval of the major department.

Time Limits for Completion of the Master of Science Degree

The candidate for the Master of Science degree who is in residence for consecutive academic years should complete all requirements for the degree within two calendar years from the date of his first registration in the Graduate School. Any candidate must complete all requirements within six calendar years of his first registration.

The Thesis

The thesis should demonstrate the student's ability to collect, arrange, interpret, and report pertinent material on his special research problem.

Filing the Thesis Title. *On or before March 1 for a June degree* or on or *before July 1 for a September degree,* the student must file with the Dean of the Graduate School, on the official form, the title of the thesis and declaration of intention to graduate. If degree requirements have been met before the deadlines above, the intention to graduate must be filed one month before the thesis is presented. The title must have the approval of the Director of Graduate Studies in the major department, and of the thesis supervisor.

Preparing the Thesis. All basic requirements for preparing the thesis are described in the *Manual of Style for Theses and Dissertations,* revised 1961, obtained at the Duke University Book Store, West Campus. The quality of paper, form, and binding are prescribed in the *Manual.*

Submitting the Thesis. Four typewritten copies of the thesis bound in snap binders secured through the Graduate School Office must be submitted in approved form to the Dean of the Graduate School on or before May 1 for a June degree or August 15 for a September degree and at least three days before the scheduled date of the student's examination. The copies will then be distributed to the several members of the examin-

ing committee. Two copies for the Library and one for the adviser will be bound by the Ruzicka Bindery, fee $5.00 a volume. The student will state whether or not he wishes more than three so bound.

The Examining Committee and the Examination

The instructor who directs the thesis appoints an examining committee composed of himself and two other members of the Graduate Faculty, one of whom must be from a department other than that of the major. If the student has been permitted to take related work *within* the major department, the third member may represent the minor field within the department. This committee is submitted for approval to the Dean of the Graduate School when the thesis is first presented.

The candidate appears before this committee for an examination which lasts for about one and one-half hours. The subject matter covered in the examination is usually restricted to the thesis and to the major field.

If the candidate passes his examination, the examining committee certifies this fact by signing the title page of all copies of the thesis. The candidate then returns the original, the two carbon copies of the thesis, and any others he wishes bound by Ruzicka, to the Dean of the Graduate School, who deposits them in the University Library.

Doctor of Philosophy

The degree of Doctor of Philosophy is offered in the fields of civil, electrical, and mechanical engineering. It is essentially a research degree. The granting of the Ph.D. is based primarily upon the student's knowledge of a specialized field of study and upon the production of an acceptable dissertation embodying the results of original research. Although course work is a necessary part of the student's program, the mere accumulation of course credits will not be sufficient for attaining this degree.

Requirements for the Ph.D. Degree

The formal requirements, discussed in detail below, for the Ph.D. degree are as follows: (1) foreign languages; (2) major and minor courses; (3) supervisory committee for program of study; (4) residence; (5) preliminary examination; (6) dissertation; (7) final examination. In order to be considered for candidacy for the Ph.D. degree, the student must have passed all of his course work in the first year of graduate study; on at least 9 units of course work he must have made a grade of G or better.

Foreign Languages. A reading knowledge of two acceptable foreign languages is required (normally two of the following: French, German, or Russian). A student working toward the doctoral degree should complete the language requirements for that degree at the earliest possible date.

Special courses designed to assist graduate students in acquiring a reading knowledge of French or German are offered for three hours a week, French during the fall semester, German during the spring semester and the Summer Session. A student who registers for either course must reduce his normal load of graduate courses by three units, with no reduction in fees. *No auditors* are permitted in these courses at any time.

Major and Minor Subjects. The student must present acceptable grades for a minimum of 48 units of graduate courses: at least 24 in course work in his major area of concentration in engineering (not necessarily confined to the offerings of the engineering department in which the student is registered); a minimum of 12 units in a minor subject outside of engineering which lends broad support to his program (usually in the mathematical or natural sciences); and the remaining 12 of the 48-unit course requirement in either the major or minor subject, or in an area approved by the major department and by the Dean of the School of Engineering.

Residence. For students who first registered in September, 1959, or thereafter, the minimum registration requirement is 60 units of graduate credit not more than 30 units of which may be accepted by transfer. Since a full program is 30 units per academic year, the prospective Ph.D. candidate who enters with the B.S. degree must plan to spend in residence a minimum of two academic years; if he enters with the M.S. degree, his minimum residence is one academic year. If there are undergraduate deficiencies in his program, he may in addition to the minimum requirements be required to take preliminary undergraduate courses for which he will not receive graduate credit. Even if there are no such undergraduate deficiencies, the student's supervisory committee will determine what requirements, if any, above the minimum the student must meet.

For requirement of registration see Normal Registration, page 53.

Committee to Supervise the Program of Study

The Director of Graduate Studies of the major department will, during the first period of full-time registration of each doctoral aspirant, appoint a program advisory committee consisting of three members of the Graduate faculty in areas relevant to the student's intended major. This committee will guide the student in the initial stages of his program.

Not later than two months before the preliminary examination the Director of Graduate Studies in the major department will nominate for approval of the Dean of the Graduate School of Arts and Sciences a supervisory committee of five, one being designated as chairman. This committee will include at least three members of the major department and one from the minor. This committee will draw up a program of study and administer the preliminary examination and, with such neces-

sary changes as are approved, the final doctoral examination. The final examination may be administered with a minimum of four members.

When the preliminary examination is arranged, the committee and the Director will submit to the Dean of the Graduate School the student's program of study bearing a statement that the Department's course and language requirements have been or are being completed.

Time Limitations

1. At the time that the preliminary examination is passed any courses, language certifications, or other credits for advanced standing which are more than six calendar years old will not be accepted toward fulfilling the minimum requirements of the doctoral degree.

2. The student should normally pass the preliminary examination by the end of his second year of graduate study. If he has not passed it by the middle of the third year, he must file with the Dean of the Graduate School a statement explaining the delay and setting a date for the examination. Except under unusual circumstances, extension will not be granted beyond the end of the third year.

3. The doctoral dissertation should be submitted and accepted within two calendar years after the preliminary examination is passed. Should the dissertation not be submitted and accepted within four years after the examination, the candidate, with the approval of his committee, may petition the Dean of the Graduate School for an extension of one year. Should this extension be granted and the dissertation not be submitted and accepted within the year, the student to remain a candidate for the degree must pass a second preliminary examination. In such a case, the time limit for submitting the dissertation will be determined by the Dean of the Graduate School and the candidate's committee.

Credit for Summer Work

Credit earned in the Summer Session will not reduce the minimum required residence (see above, p. 57).

Preliminary Examination

A student is not accepted as a candidate for the Ph.D. degree until he has passed the preliminary examination. A transfer student who may have passed a preliminary examination elsewhere must nevertheless take the examination in this Graduate School. The examination ordinarily covers both the major and minor fields. The preliminary examination for a student majoring in engineering must contain an oral component of approximately two hours' duration and may, at the discretion of the committee, include a written component.

In the summer, a preliminary examination may be scheduled only between the opening and closing dates of the Summer Session.

Privilege of Re-Examination. Should the student fail the preliminary examination, he may apply, with the consent of his supervisory committee and of the Dean of the Graduate School, for the privilege of a second examination to be taken no sooner than three months after the date of the first. Failure on the second examination will render the student ineligible to continue his program for the Ph.D. degree at Duke University.

The Dissertation

The dissertation is expected to be a mature and competent piece of writing, embodying the results of significant and original research.

Filing Title. Not later than March 1 (March 2 if March 1 falls on Sunday) preceding the June commencement at which the degree is expected to be conferred, the student must file with the Dean of the Graduate School, on the official form to be obtained from the Graduate Office, the title of the dissertation. This title must receive the written approval of both the Director of Graduate Studies of the student's major department and the professor who directs the dissertation.

Form. The basic requirements for preparing the dissertation such as quality of paper, form, and binding are prescribed in the instructions for microfilming (see below) and in the *Manual of Style for Theses and Dissertations,* revised 1961, to be obtained from the Duke University Book Store, West Campus.

Submitting Dissertation. The dissertation must be completed to the satisfaction of the instructor who directs it. Four typewritten copies bound in snap binders secured through the Graduate School Office must be deposited with the Dean of the Graduate School on or before April 15 preceding the June commencement when the degree is to be conferred. The dissertation must be submitted to the Graduate Office at least seven days before the scheduled date of the student's examination.

Publication on Microfilm. All doctoral dissertations will normally be published on microfilm through University Microfilms, Ann Arbor, Michigan. Authors may, if they wish, also copyright them. The abstract will be published in Dissertation Abstracts. Before final typing is completed, the candidate should obtain in the Graduate Office detailed instructions on the procedure and the microfilming agreement.

In brief, all copies of the dissertation, the original in clean type, will remain unbound except for spring binders. Ten copies of an abstract carefully written and not more than 600 words long, are submitted when the dissertation is first presented to the Graduate Office. A nonreturnable dissertation fee of $25 is charged for handling and microfilming. If copyright is desired, an additional fee is charged of $6 plus 2-½ cents per page. The original copy and two carbon copies will be bound by the Ruzicka

Bindery. The fee is $5.00 a volume. The student may request that more than the three copies be so bound.

Final Examination

The final oral examination shall be primarily on the dissertation. Questions may, however, be asked in the candidate's major field. Except in unusual circumstances approved by the Dean a final examination will not be scheduled between the last day of the spring examination period and registration day in the fall semester.

If a student fails his final examination, he may be allowed to take it for a second time, but not sooner than six months from the date of his first. Permission to take the second examination must be obtained from the instructor who directed the dissertation and from the Dean of the Graduate School. Failure to pass the second examination renders the student ineligible to continue work for the Ph.D. degree at Duke University.

Deposit of the Dissertation. After the examination has been passed, the candidate brings to the Graduate Office the original and first two carbon copies of the dissertation, properly signed, and any other copies he wishes bound by Ruzicka. At this time he signs the microfilming agreement and pays such binding and copyright fees as are due.

Graduate Academic Regulations

Grades, Hours, and Credits

Although ideally graduate study is principally individual reading, research, and laboratory experimentation under guidance, academic progress in the United States is generally measured and recorded in terms of course hours and credits. The term *residence* designates full-time study and research in close proximity to facilities provided for both as opposed to part-time study incidental to a full-time occupation. Here required residence of one year is defined as two successive academic semesters of not less than nine units registration each semester. Credit for courses and seminars, research, and residence, and corresponding tuition and fees are stated in terms of units. According to conventional measurement one unit is equivalent to one semester hour.

Credits Earned Outside this Graduate School

Graduate Credit Earned before the B.S.E. Degree is Granted. Ordinarily no credit will be allowed for graduate courses earned before a student has been awarded his B.S.E. degree. However, an undergraduate

student at Duke University who, at the beginning of his final semester, lacks no more than 9 semester hours of fulfilling the requirements for the B.S.E. degree, may obtain permission from the Dean of the Graduate School to enroll for graduate courses sufficient to bring his total program to fifteen hours a week. Such graduate courses will be credited toward the M.S. degree, provided that the student meets the requirements for admission to the Graduate School, and that he is duly registered in the Graduate School at the beginning of the final semester.

Under certain circumstances a maximum credit of 6 units may be allowed toward the M.S. degree for graduate courses completed elsewhere. The acceptance of credit up to this amount, however, will not reduce the minimum of required registration at Duke University. (See below.) With the approval of both the student's major department and the Dean of the Graduate School, a student who is granted such transfer credit may be permitted to register for as much as 12 units of thesis research instead of the usual 6 units. Or he may be permitted to fill out his schedule with as much as 6 units of further undergraduate training or 6 units of required language courses on the undergraduate level. In no case will credit be allowed for extension or correspondence courses.

Under appropriate circumstances up to 30 units of graduate credit may be accepted toward the Ph.D. degree for students entering with the M.S. degree from another institution.

Transfer of Graduate Credits. Credit for graduate course work earned at another institution will be determined only after a student has spent one semester at Duke University. After completing his first semester, the student through his Director of Graduate Studies should file a request that his credits be reviewed and a decision be made.

Reciprocal Agreement with the Consolidated University of North Carolina. Under a plan of cooperation between the University of North Carolina and Duke University, students regularly enrolled in the Graduate Schools of the University of North Carolina during the regular academic year, and paying full fees to that institution, may be admitted to a maximum of two courses per semester in the Graduate School of Duke University upon payment of a nominal registration fee of two dollars and of any other special fees regularly required of all students. Under the same arrangements, students in the Graduate School of Duke University may be admitted to course work at the University of North Carolina. A similar arrangement is effective in the Summer Session. (See the *Summer Session Bulletin.*)

Grades

Grades in the Graduate School are as follows: E, G, S, F, and I. E (exceptional) is the highest mark. G (good) and S (satisfactory) are

the remaining passing marks. F (failing) is below passing, and I (incomplete) indicates that some portion of the student's work is lacking, for an acceptable reason, at the time the grades are reported. The instructor who gives an I for a course specifies the date by which the student must have made up the deficiency, in no case more than one calendar year from the date the course ended. If the course is not completed, the grade of F is entered upon the student's record unless his appeal to the Dean for the grade No Credit is approved. The grade of Z indicates satisfactory progress at the end of the first semester of a two-semester course. It will be changed to whatever grade is appropriate upon the completion of the course. A grade of F in a major course normally occasions withdrawal from a degree program not later than the end of the ensuing semester or term; a grade of F in a minor course occasions academic probation.

Courses Primarily for Undergraduates

Students granted provisional admission and others whose preparation is found deficient may on occasion be required as part of their program to take undergraduate courses as prerequisites to continued graduate study. Undergraduate courses thus taken and others elected by the student will carry no graduate credit.

In exceptional cases, 100-level courses *outside the major department* may be taken for graduate credit to a maximum of two one-semester courses or one year-course not exceeding a total of 8 units, when approved by the Directors of Graduate Studies in the major department and in the department in which the course is listed and by the supervisor of the program.

Withdrawal and Interruption of Program

From a Course. For permissible changes during the first thirty days after the registration date, see Change of Registration, page 52. If a course is dropped without the necessary approval, the permanent record will list the course as *Dropped Unofficially, F.* If a course is dropped after the thirty-day period, the status of the student at the time of withdrawal from the course will be determined and be indicated on the permanent record as *Withdrew Passing (WP)* or *Withdrew Failing (WF).*

From the Graduate School. The University reserves the right, and matriculation by the student is a concession of this right, to request the withdrawal of any student whose conduct at any time is not satisfactory to the University, even though no specific charge be made against the student. If a student wishes for any reason to withdraw from the Graduate School, he should notify both the Director of Graduate Studies in his

major department and the Dean of the Graduate School prior to the date of his expected withdrawal. For withdrawal occasioned by academic failure, see above.

Students who find it necessary to interrupt their program of study for a period longer than a summer vacation should, before departure, leave with the Graduate Office a statement of the reason for interruption, mailing address, and expected date of return. If they are subject to registration *in absentia*, they should arrange for such registration before departure.

A foreign student who after successfully completing a minimum of one semester's graduate study must withdraw for the purpose of returning home before the completion of a graduate program may with the approval of his major department request the Dean to issue him a Certificate of Graduate Study.

Transcript

A student who wishes to transfer his credits from Duke University to another institution is entitled to one free transcript of his record. A fee of one dollar, payable in advance, is charged for each additional copy. Requests are directed to the Central Records Office.

Undergraduate Nonacademic Regulations

Conduct and Discipline

The University expects of its students loyal and hearty cooperation in developing and maintaining high standards of conduct as well as of scholarship. General University regulations concerning conduct of students are made available to students when admission is offered, or upon request. The student in accepting admission indicates his willingness to subscribe to those regulations. The University reserves the right, and matriculation by the student is a concession of this right, to ask the withdrawal of any student whose conduct at any time is not satisfactory to the University, even though no specific charge may be made against the student.

General oversight of the conduct of students and the administering of discipline are under the supervision of appropriate deans. Immediate supervision is entrusted to the Dean of Men and the Dean of Women. However, through the expressed willingness of the students of the University to assume the responsibility of maintaining high standards of morality, the student body has become to a great degree self-governing. Two councils, one of men and the other of women, each composed of duly elected representatives of the student body, exercise the authority granted

the students by their respective colleges to investigate all cases of misconduct, as well as all other cases of violation of proper standards and traditions, and to make recommendations of penalities based on their finding. They exert a guiding and stimulating influence for the promotion of high ideals of conduct among students.

For more complete information, see *Bulletin of Information and Regulations, Trinity College and the School of Engineering.*



Courses of Instruction

Undergraduate Engineering Non-Departmental Courses

Dean Meriam; Associate Dean Kraybill

Egr 1. ***Engineering Design I.*** Brief history of engineering and its relation to civilization and progress. Development of professionalism. Elements of engineering graphics as a means of visualizing and communicating engineering problems. Short projects to give the student experience in problem solving and the use of his knowledge toward logical solutions. 2 s.h. *Lewis and Linderoth*

Egr 2. ***Engineering Design II.*** An introduction to computer-aided design. Larger projects involving design teams, realistic project budgets, and close attention to feasibility. Graphical solution of problems using orthographic projection; charts, graphs, graphical calculus. Prerequisite: Math 51. 2 s.h. *Lewis and Linderoth*

Egr 23. ***Statics.*** Analysis of force systems and their equilibrium as applied to engineering systems; algebraic methods used with vector notation where appropriate. Principle of virtual work, stability of equilibrium; friction; distributed force systems; equilibrium of differential elements. Corequisite: Math 22. 3 s.h. *Arges, Dvorak, and Nash*

Egr 53. ***Engineering Design III.*** An introduction to the theory and techniques of measurement with emphasis on the design of measurement systems: the nature of experimental error, interpretation of experimental data, and error analysis. Laboratory with design and execution of selected

measurement problems. Prerequisite: Math 22. 2 s.h. *Macduff and Warner*

Egr 63. ***Introductory Electric Systems I.*** Complete analysis (transient and steady state) by transform methods of linear lumped parameter networks. Primary emphasis on electric networks but mechanical and electro-mechanical networks included. Application of modern analysis techniques to present day electrical engineering systems that are of concern to all engineers, e.g., amplifiers and transducers. Laboratory included. Corequisites: Math 63 and Phys 51. 4 s.h. *Meier, Pilkington, Thurstone, and Wells*

Egr 73. ***Mechanics of Deformable Bodies.*** Stresses and strains in deformable bodies; mechanical behavior of materials and relation of stress to strain; applications of principles to static problems of beams, torsion members, columns, elementary shells; introduction to energy principles, applications. Selected laboratory work. Prerequisite: Egr 23. 3 s.h. *Arges, Brown, Dvorak, and Palmer*

Egr 83. ***Structure and Properties of Solids.*** An introduction to materials science and engineering, emphasizing the relationships between the structure of a solid and its properties. The atomic and molecular origins of electrical, mechanical and chemical properties are treated in detail for metals, alloys, polymers, ceramics, glasses and composite materials. Prerequisite: Chem 2. Corequisites: Math 63 and Egr 73. 3 s.h. *Pearsall and Shepard*

Egr 101. ***Thermodynamics.*** A basic study of the laws of thermodynamics and their use in engineering analysis and design. The study of the thermodynamic properties of substances is included. Prerequisites: Chem 2 and Phys 52. 3 s.h. *Kenyon*

Egr 113. ***Introductory Electric Systems II.*** A continuation of Egr 63. Selected laboratory work. 3 s.h. *George, Joines, Trickey, and Wells*

Egr 123. ***Dynamics.*** General principles of dynamics of engineering systems. Kinematics of motion; dynamics of particles, systems of particles, rigid bodies. Impulse-momentum and work-energy principles. Introduction to advanced methods in dynamics; Lagrange's equation. Prerequisites: Egr 23, Math 63, and Phys 51. 3 s.h. *Arges, Hill, J. F. Wilson, and Wright*

Egr 133. ***Heat Transfer.*** An introduction to the concepts of conduction, convection and radiation. A study of temperature gradients, steady and transient heat flow by analytical, graphical, numerical and analogical methods. Selected laboratory work. Prerequisite: Math 63. Corequisite: Egr 101. 2 s.h.

Egr 143. ***Fluid Mechanics.*** Physical properties of fluids; fluid flow concepts and basic equations; continuity, energy and momentum principles; dimensional analysis and dynamic similitude; viscous effects; applications, emphasizing one-dimensonal flow theory for incompressible,

real fluids. Selected laboratory work. Prerequisite: Math 63. Corequisite: Egr 123. 2 s.h. *Muga, J. F. Wilson, and others*

Egr 163. ***Fields.*** Treatment of selected topics in field theory of interest to engineers. Basic field concepts, the Laplacian, field sources, waves, diffusion, continuum concepts, the wave nature of elementary particles. The common structure of field theory is applied to selected topics such as thermal conduction, fluid fields, stress-strain in elastic solids, electric and magnetic fields, and electromagnetic fields. Selected laboratory work. Prerequisite: Math 111. Corequisites: Egr 113, 123, 133, and 143. 3 s.h. *George and Pilkington*

Egr 169.* ***Legal Aspects of Engineering.*** A course designed to introduce engineering students to those aspects of the law encountered in the practice of engineering. Subjects included are: contracts and specifications, real and personal property, torts, insurance, agency, equity, evidence, labor management, sales, expert testimony, engineering registration and ethics. Open to seniors only. 3 s.h. *Olive*

Egr 170.* ***Patent Law for Engineers.*** A course designed to familiarize engineering students with the legal principles and procedures for protecting patentable inventions, such as drafting and analysis of specifications and claims, study of infringements, assignments, licenses, and record documentation. Open to seniors only. 3 s.h. *Olive*

Civil Engineering

Undergraduate Courses

Associate Professor Hill, *Acting Chairman*; Professor Bryan, *Director of Undergraduate Studies*

CE 96. ***Geodetic and Location Measurements.*** The theory of measurements and errors associated with controlling and locating systems of constructed facilities; modern field methods and equipment. Laboratory included. Prerequisite: Egr 53. 3 s.h.

CE 101. ***Soil Mechanics Laboratory.*** Soil exploration and sampling. Laboratory determination of index properties: water content, void ratio, particle size, Atterberg limits. Consolidation testing. Triaxial shear testing. Classification and identification of soils. Compaction testing. Demonstrations of seepage, bearing capacity and earth pressure phenomena. Concurrent: CE 135. 1 s.h. (Not offered after 1967-68.) *Koerner and Vesić*

CE 110.* ***Plane Surveying.*** Use and adjustment of instruments; transit-tape, and stadia surveying; differential and profile leveling; calculation of

*Offered only upon sufficient demand; enrollment limited.

bearings, latitudes, departures, and areas; accuracy and errors; topographic mapping. Prerequisites: Egr 53 and Math 51. 3 s.h. *Arges*

CE 116. ***Transportation Engineering.*** History of transportation problems; highway, air, pipeline, mass and rapid means of transporting people and materials; design problems requiring the collection and processing of data; selection of transportation means, development of routes, and evaluation of solutions. Concurrent: CE 96. 3 s.h. *Cribbins*

CE 118. ***Materials of Construction.*** Determination of physical and mechanical properties of construction materials and their components; use of properties as a basis for design; effect of loading, time, and environment on properties; design of construction materials. Laboratory included. Prerequisites: Egr 73 and 83. 2 s.h.

CE 121.* ***Hydrology.*** Study of processes governing the depletion and replenishment of water resources of land areas; application of this knowledge to solution of civil engineering problems. Topics include weather, the hydrologic cycle, hydrographs, precipitation, runoff, infiltration, groundwater, water losses, evaporation and transpiration, steam gaging, flood control and storm drainage. Field trips to be arranged. Prerequisite: CE 123. 3 s.h. *Bryan*

CE 123. ***Hydraulic Engineering.*** Hydraulics of pressure conduits and measurement of flow, compound pipe systems, analysis of flow in pressure distribution systems, descriptive and quantitative hydrology applied to problems of irrigation and drainage, open channel flow, reservoirs and distribution system storage. Selected laboratory work. Prerequisite: Egr 143. 3 s.h. *Muga*

CE 124. ***Sanitary Engineering.*** Qualitative and quantitative physical, chemical, and bacteriological characterization of water and wastewater. Introduction to water treatment processes, and wastewater collection, treatment and disposal systems; elements of environmental sanitation. Laboratory included. Field trips to be arranged. Prerequisite: CE 123 or consent of instructor for non-civil-engineering students. 3 s.h. *Bryan*

CE 126.* ***Sanitary Engineering Design.*** Design of facilities for providing an adequate supply of water of good quality, and means for collection, treatment and disposal of municipal and industrial wastewaters. Location and design of treatment works. Field trips to be arranged. Prerequisite: CE 124. 3 s.h. *Bryan*

CE 131. ***Structural Mechanics I.*** A unified treatment of the methods of analysis of statically determinant and indeterminant structural systems. Serves as an introduction to the process of applying the engineering method to the creation of structures. Prerequisites: Egr 73 and Math 64. 3 s.h. *Brown*

CE 132. ***Structural Design.*** Tension, compression, flexural members,

*Offered only upon sufficient demand; enrollment limited.

eccentric connections, unsymmetrical bending, riveted and welded plate girders, trusses and office building frames. Timber design using ring connectors. Design and detail drawings. Prerequisite: CE 131. 4 s.h. (Not offered after 1967-68.) *Palmer*

CE 133. ***Structural Design I.*** Non-homogeneous materials. Theory and design of compression and flexural members. Emphasis on ultimate strength theory for concrete. Timber connections. Selected design problems in concrete to include forms and timber supports. Prerequisite: Egr 73. Concurrent CE 131. 3 s.h. *Palmer*

CE 134. ***Structural Design II.*** Design in metals, primarily steel. Tension, compression, and flexural members. Riveted, bolted, and welded connections, including eccentric connections. Built-up members. Design by elastic and plastic methods. Selected problems to include computations and drawings. Prerequisite: CE 131. 3 s.h. *Palmer*

CE 135. ***Introduction to Soil Mechanics.*** Origin and composition of soils, soil structure. Flow of water through soils; capillary and osmotic phenomena. Soil behavior under stress; compressibility, shear strength. Elements of mechanics of soil masses with application to problems of bearing capacity of foundations, earth pressure on retaining walls, and stability of slopes. Prerequisites: Egr 107, 109, and 128. Concurrent: CE 101. 2 s.h. (Not offered after 1967-68.) *Vesić*

CE 139. ***Introduction to Soil Mechanics.*** Origin and composition of soils; soil structure. Flow of water through soils; capillary and osmotic phenomena. Soil behavior under stress; compressibility, shear strength. Elements of mechanics of soil masses with application to problems of bearing capacity of foundations, earth pressure on retaining walls, and stability of slopes. Laboratory included. Prerequisites: Egr 73 and 83, and CE 123. 3 s.h.

CE 140.* ***Structural Mechanics II.*** Analysis of statically indeterminate structures by various methods including those of elastic energy. Prerequisite: CE 131. 3 s.h. *Brown*

CE 143, 144.* ***Projects in Civil Engineering.*** These courses can be taken as electives by certain seniors who have shown aptitude and interest in research. Permission for enrollment should be secured from the Director of Undergraduate Studies, with the approval of the student adviser and the professor under whom the project will be undertaken. 1-6 s.h.

CE 146.* ***Professional Engineering.*** Topics related to the practice of civil engineering: engineering economy, contracts, specifications, and ethics. Presentation of student papers on historical and current aspects of civil engineering. Seniors only. 2 s.h. *Palmer*

CE 148.* ***Structural Engineering.*** Structural design utilizing metals, concrete and timber. Planning, preliminary design, organization of design

*Offered only upon sufficient demand; enrollment limited.

procedures and specifications. Prerequisites: CE 133 and CE 134. 3 s.h. *Palmer*

CE 150. ***Engineering Systems Analysis.*** Systems approach to engineering design, and operation problems. Emphasis on linearized models and linear programming. Deterministic models, critical path scheduling, optimization techniques and their application to engineering problems. Prerequisite: Senior standing. 2 s.h.

*Graduate Courses**

Associate Professor Hill, *Acting Chairman*; Professor Vesić *Director of Graduate Studies*; Professors Brown, Bryan, Meriam, and McDonald; Associate Professor Kumar; Assistant Professors Dvorak, Muga, and Wilson

CE 201. ***Advanced Mechanics of Materials.*** Analysis of states of stress and strain; constitutive relations; equilibrium; energy principles and methods. Applications to beam columns, beams on elastic foundations, curved beams, plates and shells; buckling. 3 units. *Hill and McDonald*

CE 202. ***Experimental Mechanics.*** Experimental analysis of stress and strain; correlation of theory with experimental data; errors; photoelasticity; strain gages; brittle lacquers; similitude principles and design of models; dynamic measurements. 3 units. *Hill*

CE 204. ***Plates and Shells.*** Analysis of stress and deformation in plates; vibrations, buckling of plates. Membrane stress systems in shells; deformations of membrane shells. Introduction to bending theory of shells. Prerequisite: CE 201 or equivalent. 3 units. *Hill*

CE 205. ***Elasticity.*** Introduction to linear theory of elasticity; plane stress, plane strain, three-dimensional problems of torsion and bending; stress concentrations; torsion of thin-walled sections; complex potential representation. Prerequisite: CE 201 or equivalent. 3 units. *Dvorak*

CE 211. ***Mechanical Behavior of Materials.*** Micro versus macro aspects of materials; slip deformation; dislocations; general mechanical properties; fracture; simple and combined stress response; design with yield, fracture, creep, relaxation, fatigue, and impact considerations. 3 units. *Kumar*

CE 212. ***Structural Materials.*** Fracture mechanics; viscoelastic, polymeric, and composite materials; strain rate behavior of materials; high velocity and hypervelocity impact. Prerequisite: CE 211. 3 units. *Dvorak and Kumar*

CE 221. ***Incompressible Fluid Flow.*** Steady and unsteady pipe flow, theories of turbulent flow; water hammer theory and control; surge tanks; air chambers; the analysis and control of fluid systems; effect of resistance; tapered conductors. 3 units. *Muga*

* Offered only upon sufficient demand; enrollment limited.

CE 224. *Coastal and Tidal Hydraulics.* Basic analytical concepts; wave phenomena, theory of surface water wave motion, wave modification, internal waves, wave spectra, Selected problems; harbor seiching, moorings, fenders, sand by-passing, breakwater and pier design. 3 units. *Muga*

CE 231. *Structural Engineering.* The application of the fundamental theories of structural action to the design and analysis of structural members; specifications. 3 units. *Brown*

CE 232. *Reinforced Concrete Design.* Design and analysis of reinforced concrete members including the influence of shrinkage and plastic flow; bond and diagonal tension; prestressed concrete members. 3 units. *Brown*

CE 235. *Foundation Engineering.* An introduction to methods of analysis, design and construction of foundations. Bearing capacity and settlement of shallow and deep foundations. Soil exploration; excavation and bracing; drainage and stabilization; underpinning. Foundation vibrations. 3 units. *Vesić*

CE 236. *Earth Structures.* An introduction to methods of analysis, design, and construction of earth structures such as dams, embankments, cuts, canals, airfield and highway pavements. Selection of materials, soil compaction and stabilization. Theory of seepage, design of wells and drainage collectors. Slope stability and related problems. Theory of layered systems and pavement design procedures. 3 units. *Vesić*

CE 243, 244. *Sanitary Engineering Unit Operations and Process Design.* Fundamental bases for design of water and waste treatment systems, including transport, mixing, sedimentation and filtration, gas transfer, coagulation, and bio-treatment processes. 6 units. *Bryan*

CE 250. *Engineering Analysis.* A study of selected engineering problems for which ideal mathematical models are formulated, usually in terms of differential equations; use of digital computers; application of infinite series, finite difference calculus, energy, and collocation methods; problem orientation; static and dynamic behavior of rods, beams, plates; diffusion. 3 units. *Wilson*

CE 303. *Elastic Stability.* The concept of stability and its role in engineering applications. Specific topics to be covered include elastic columns with various end restraint; buckling of frameworks; rings and arches; lateral buckling of beams; buckling of thin plates and shells; utilization of energy theorems and calculus of variations; introduction to dynamic stability. Prerequisite: CE 201. 3 units.

CE 304. *Advanced Plates and Shells.* General theory of elastic shells; bending of circular cylindrical shells, shells of revolution; analytical solutions; simplified theories. Finite element and finite difference analysis of plates and shells; folded plates; design of plate and shell structures. Prerequisite: CE 204. 3 units. *Hill*

CE 305. *Advanced Elasticity.* Complex variable methods in theoretical elasticity; stress, displacement, and mixed boundary value problems in plane strain and longitudinal shear (antiplane strain); axial symmetry. Dynamic boundary value problems; moving loads, punches, and cracks. Prerequisites: CE 205, Math 286. 3 units. *Dvorak*

CE 306. *Plasticity.* A study of the macroscopic state of stress and strain in plastically deformed materials; yield criteria; flow rules; slip line field theory and the solution of boundary value problems for metals and granular media; anisotropy. Prerequisites: CE 205 and CE 211 or equivalent. 3 units. *Wilson*

CE 307. *Viscoelasticity.* Models and definitions of viscoelastic solids; viscoelastic functions and their interrelations. Waves, vibrations, and pulse propagation in viscoelastic rods and beams; correspondence principle. Buckling of columns; three-dimensional viscoelasticity; vibrations; quasi-static and dynamic boundary value problems. Measurement of viscoelastic properties. Prerequisite: CE 205 or equivalent. 3 units. *Dvorak*

CE 309. *Advanced Structural Dynamics.* Dynamic stability and the vibrations of discrete and continuous systems; conservative and nonconservative systems; parametric excitation; Lyapunov's theorems; wave propagation; random excitation. Prerequisite: ME 203. 3 units. *Wilson*

CE 321. *Mechanics of Ideal Fluids.* Basic equations of ideal fluid flow; potential and stream functions; vortex dynamics; body forces due to flow fluids; methods of singularities in two-dimensional flows; analytical determination of potential functions; conformal transformations; free-streamline flows. Prerequisite: Math 286 or equivalent. 3 units. *Muga*

CE 331, 332. *Advanced Structural Design and Analysis.* Analytical and behavior concepts of structural components as related to the design of structural systems; classical methods; numerical and approximate techniques; behavior of structural elements under static and dynamic loading; buckling behavior. Prerequisites: CE 231 or equivalent. 6 units. *Brown and Hill*

CE 335. *Mechanical Behavior of Soils.* Origin of soils, soil minerals and processes of soil formation; physical chemistry of multiphase systems and soil structure. Premeability of flow of water through soils; capillary and osmotic phenomena; soil compressibility; theory of consolidation; shear strength and failure criteria. Stress-strain relationships, volume changes and pore pressures during shear. Strength properties. Advanced laboratory soil testing techniques. 4 units. *Vesić*

CE 336. *Advanced Soil Mechanics.* Theories of plastic and elastic equilibrium of soil masses and their application to analysis of problems such as: pressure on retaining walls, anchored bulkheads, cofferdams, silos, shafts, tunnels; stability of slopes; stresses and settlements in soil

masses and pavements; piles and pile groups subjected to lateral loads. Prerequisite: CE 335. 4 units. *Vesić*

CE 337. ***Elements of Soil Dynamics.*** Behavior of soils and foundations under transient and impact loads. Mechanics of pile driving. Foundation vibrations. Effects of explosions on soils; wave propagation; cratering. Earthquake effects on foundations, earth dams, and slopes. Compaction of loose soils by explosives or by vibration. Behavior of layered systems under dynamic loads. Prerequisite: CE 335 or consent of instructor. 3 units. *Vesić*

CE 365. ***Advanced Topics in Civil Engineering.*** Opportunity for study of advanced subjects relating to programs within the Civil Engineering Department tailored to fit the requirements of a small group. 1 to 3 units. *Members of the Graduate Staff*

CE 399. ***Special Readings in Civil Engineering.*** Special individual readings in a specified area of study in civil engineering. Prerequisite: approval of the Director of Graduate Studies. 1 to 3 units. *Members of the Graduate Staff*

Electrical Engineering

Undergraduate Courses

Professor Wilson, *Chairman*; Professor Meier, *Director of Undergraduate Studies*

EE 161. ***Electronics and Signals.*** Techniques for the analysis and design of electronic circuits with emphasis on graphical and piece-wise-linear methods; applications of these methods to particular circuits, including transistor and tube amplifiers, oscillators and switching circuits. Introduction to amplitude-, frequency-, and pulse-modulation systems. Prerequisite: Egr 113. Two class sessions and one computation or laboratory session. 3 s.h. *Beadles and Nolte*

EE 162. ***Electromechanical Energy Conversion.*** Principles of energy storage and conversion utilizing magnetic and electric fields; analytical treatment of dynamic equations of motion, including the Euler-Lagrange approach; applications to the design of electromechanical transducers and rotating machines. Prerequisites: Egr 113, 123, and 163. Two class sessions. 2 s.h. *Trickey and Wilson*

EE 163. ***Physical Electronics.*** Study of physical processes under the influence of electric, magnetic, thermal, and stress fields with contemporary electrical engineering applications: e.g., transistors, thermoelectric energy converters, and magnetic devices. Prerequisites: Engrg 163 and Phys 161. Corequisite: EE 164. Two class sessions and one computation or laboratory. 3 s.h. *Hacker*

EE 164. *Electromagnetic Fields and Waves.* Electric and magnetic fields; Maxwell's equations developed from Coulomb's, Ampere's and Faraday's laws and the solenoidal nature of the magnetic field; electrostatics; magnetostatics; quasi-static and stationary fields; electromagnetic waves; retarded potential; relaxation time, reflection, polarization, and radiation of electromagnetic waves; transmission lines; probability waves in periodic structures. Prerequisite: Egr 163. Two class sessions and one computation or laboratory. 3 s.h. *Kerr*

EE 167. *Design Colloquium.* A course planned to guide the student in learning how the fundamental principles studied in the academic program are translated into the realities of engineering practice. The vehicle will be an extensive and intensive study of a significant modern engineering project. Extensive reference to published information and possible site visits to the projects will be part of the mode of operation, as will written and oral reports. 2 s.h. *Meier*

EE 173-174.* *Projects in Electrical Engineering.* A course which may be undertaken only by seniors who are enrolled in the Graduation with Distinction program, or who show special aptitude for individual project work. Consent of the Director of Undergraduate Studies required. Elective for electrical majors. 1-6 s.h. *Staff*

EE 185. *Pulse and Digital Electronics.* Generation and shaping waveforms encountered in information processing systems, such as radar, computer, control and instrumentation. Typical circuit functions included are linear and nonlinear wave shaping, pulse and time-base generation, time delay, counting and gating. Emphasis on the application of semiconductor devices to the realization of circuit functions. Prerequisite: EE 161. Two class sessions and one computation or laboratory session. 3 s.h. *George*

EE 186. *Modulation Systems and Noise.* Analysis and design of modulation systems. Description of deterministic and probabilistic signals; power spectra; sampling theory; amplitude- and frequency- and pulse-modulation systems; pulse-modulation techniques. Sources and characteristics of noise; comparison of various modulation systems. Prerequisite: EE 161. Selected laboratory work. 3 s.h. *Owen*

EE 187. *Electronic Processes in Materials.* Prediction and explanation of the response of ferroelectric, magnetic, superconductor, and semiconductor materials to thermal, electric, magnetic and stress fields. Exploration of possibilities of improving the materials. Two class sessions and one computation or laboratory. Prerequisite: EE 163. 3 s.h. *Hacker*

EE 188. *Dynamics of Electromechanical Energy Conversion.* An analytical and experimental study of the dynamic characteristics of electromechanical energy conversion devices that are utilized in both control

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and power applications. Two class sessions and one three-hour laboratory. Prerequisite: EE 162. 3 s.h. *Trickey*

EE 195.* ***Nuclear Engineering Fundamentals.*** Review of nuclear physics; fission and the chain reaction; nuclear reactor principles and concepts; materials, instrumentation, and control of nuclear reactor; selected topics in nuclear engineering. Prerequisite: permission of instructor. 3 s.h. *Meier and Wortman*

EE 196. ***Microwaves and Quantum Electronics.*** A study of the special field and circuit techniques required at microwave frequencies; electromagnetic wave progagation in unbounded and bounded media; transmission and reflection properties of various microwave networks. Equivalent circuits and matrix methods will facilitate analysis. Discussion of microwave amplifiers and oscillators, including klystrons, magnetrons, traveling-wave tubes, and masers. Selected laboratory experiments. Prerequisite: EE 164. Two class sessions and one computation or laboratory. 3 s.h. *Joines*

EE 199.* ***Linear Feedback Systems.*** Analysis and design of linear; continuous-data feedback control systems; stability tests; time and frequency domain methods; root locus method; performance specifications; study of electrical, mechanical, hydraulic, aerodynamic, pneumatic, and thermal systems. Two class sessions and one three-hour laboratory. Prerequisite: permission of instructor. 3 s.h. *Wells*

*Graduate Courses**

Professor Wilson, *Chairman*; Associate Professor Kerr, *Director of Graduate Studies*; Professors Artley, Meier, and Owen; Associate Professors Burger (Adjunct), Pilkington, Thurstone, and Wells; Assistant Professors George, Hacker, Joines, and Nolte; Lecturers Patt and Trickey

EE 203. ***Random Signals and Noise.*** Introduction to mathematical methods of describing and analyzing random signals and noise. Review of basic probability theory; joint, conditional, and marginal distributions; random processes. Time and ensemble averages, correlation, and power spectra. Optimum linear smoothing and predicting filters. Introduction to optimum signal detection and parameter estimation, with applications such as radar. Selected laboratory work. 3 units. (Fall semester.) *Kerr*

EE 204. ***Information Theory and Communication Systems.*** Information and entropy and their application in communication situations. Noise and channel capacity, coding, and the fundamental theorem of information theory. Continuous channels and transmission of band-limited signals. Comparisons of various practical modulation techniques from the standpoint of information rate and error probability. Prerequisite EE 203. 3 units. (Spring semesters 1970, 1972.) *Nolte*

EE 205. ***Signal Detection and Extraction Theory.*** Fundamentals of

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signal detection theory and its application to radar, sonar, and communication systems. Design of optimum detectors for known signals, for signals with unknown parameters, and for signals transmitted through fading channels. Analysis and comparison of optimum noise immunity of practical amplitude, pulse, and frequency modulation systems. Prerequisite: EE 203 or permission of instructor. 3 units. (Spring semesters 1969, 1971.) *Nolte*

EE 206. *Switching and Logic Networks.* Techniques for the analysis and design of switching and logic networks. Number systems and Boolean algebra; codes; minimizing techniques; logic elements; logic networks. Prerequisite: permission of instructor. 3 units. (Spring semesters 1970, 1972.) *Patt*

EE 211. *Solid State Theory.* The fundamental theory of wave motion in solids. Wave mechanics; variational method; perturbation theory; many-electron problems; one-electron approximation; free-electron approximation; electron spin; Brillouin zones; time-dependent Schrödinger's equation; and transition probabilities. Introduction to thermostatics and statistical mechanics. Prerequisite: permission of instructor. 3 units. (Fall semester.) *Hacker*

EE 212. *Solid State Materials.* Concepts of solid state physics as applied to engineering materials; electric, magnetic, thermal, and mechanical properties of solids; dielectrics; semiconductors; magnetic materials; and superconductors. Selected laboratory work. Prerequisite: EE 211. 3 units. (Spring semesters 1970, 1972.) *Hacker*

EE 213. *Principles of Magnetism.* Classical field theory and quantum mechanical descriptions of magnetic properties of materials. Diamagnetism, paramagnetism, ferromagnetism, antiferromagnetism, and ferrimagnetism. Resonance and relaxation in magnetic materials. Anisotropy, magnetostriction, domain theory and switching properties. Selected topics to relate theory of magnetism to applications of engineering interest. Prerequisite: EE 211 or permission of instructor. 3 units. (Spring semesters 1969, 1971.) *Hacker*

EE 215. *Semiconductor Physics.* A quantitative treatment of the physical processes that underlie semiconductor device operation. Topics include: band theory and conduction phenomena; equilibrium and nonequilibrium charge carrier densities; charge generation, injection, and recombination; drift and diffusion processes; low and high field conduction. Prerequisite: EE 211 or permission of instructor. 3 units. *Hacker*

EE 217. *Masers.* Principles of masers, particularly optical masers. Discussion of quantum electronics, optical configuration; solid state, gaseous, and liquid devices; modulation; high power operation. Prerequisite: permission of instructor. Two class sessions and laboratory. 3 units. (Spring semesters 1969, 1971.) *George*

EE 222. *Nonlinear Analysis.* Introduction to methods of analyzing engineering systems described by nonlinear differential equations: ana-

lytic, numerical, graphical, and series approximation methods; analysis of singular points; stability of nonlinear systems. Applications of various methods, such as the modified Euler, Runge-Kutta, isoclines, perturbation, reversion, variation of parameters, residuals, harmonic balance, Bendixon, and Liapounov to phenomena of nonlinear resonance, subharmonics, relaxation oscillations, and forced oscillating systems. Prerequisite: permission of instructor. 3 units. (Fall semester.) *Wilson*

EE 225. ***Semiconductor Electronic Circuits.*** Analysis and design of electronic circuits utilizing a variety of static and dynamic models of semiconductor devices. Transistor and other semiconductor device circuit models; bias stability; high frequency and noise models; switching characteristics; illustrative semiconductor circuits. Prerequisite: permission of instructor. Selected laboratory work. 3 units. (Spring semester.) *Joines*

EE 227. ***Network Synthesis.*** Linear network theory, including a review of time and frequency domain analysis; network graphs; network functions and realizability condition; driving point impedance synthesis of passive networks; driving point and transfer specifications; approximation methods. Prerequisite: permission of instructor. 3 units. (Fall semesters 1968, 1970.) *George*

EE 241. ***Linear Control Systems.*** Theoretical and applied principles of design of linear, continuous-data control systems. Integration of system elements into a closed loop system. Stability from Routh, Nyquist and root locus viewpoints. Time and frequency domain methods. Performance improvement using compensation. Disturbances and multiple inputs. Two class sessions and one three-hour laboratory. Prerequisite: permission of instructor. Credit not given for both EE 199 and EE 241. 3 units. (Fall semester.) *Wells*

EE 244. ***Selected Topics in Control Systems.*** Analysis and design of linear sampled-data systems using Z-transform and modified Nyquist approaches. Analysis of linear systems with statistical inputs and nonlinear systems using describing functions. Analog and digital computer techniques for the solution of appropriate problems. Prerequisite: EE 203 and either EE 199 or EE 241. 3 units. (Spring semesters 1970, 1972.) *Wells*

EE 259. ***Advanced Electric Energy Conversion.*** Equations of motion of electromechanical systems; fields and lumped parameters, state function concepts; mathematical techniques for analyzing electromechanical devices and systems; transducers; unified treatment employing matrix, tensor, and block-diagram concepts to obtain response under static and dynamic conditions: the generalized rotating machine. Prerequisite: permission of instructor. 3 units. (Offered only upon sufficient demand.) *Trickey*

EE 265. ***Advanced Topics in Electrical Engineering.*** Opportunity for

study of advanced subjects related to programs within the electrical engineering department tailored to fit the requirements of a small group. Prerequisite: approval of the Director of Graduate Studies and of instructor under whom work will be done. 1 to 3 units. *Staff*

EE 271. ***Electromagnetic Theory.*** The classical theory of Maxwell's equations; electrostatics, magnetostatics, boundary value problems including numerical solutions, currents and their interactions, force and energy relations. Three class sessions. Prerequisite: permission of instructor. 3 units. (Fall semester.) *Joines*

EE 272. ***Application of Electromagnetic Theory.*** Propagation of electromagnetic waves in various structures and media; mathematical description of microwave networks, including equivalent circuits and matrix methods; microwave circuit theorems and synthesis techniques. Selected laboratory experiments. Prerequisite: EE 271. 3 units. (Spring semesters 1970, 1972.) *Joines*

EE 304. ***Advanced Statistical Analysis and System Design.*** Advanced statistical techniques useful for analysis and design in both communication and control systems. Introduction to statistical decision theory, and design to minimize average risk. The Bayesian approach to parameter estimation, smoothing, prediction, and signal detection. Wiener-Kalman filters and their application to signal processing in control situations. Prerequisite: EE 203. 3 units. (Spring semesters 1970, 1972.) *Kerr*

EE 311. ***Quantum Theory of Materials.*** Concepts of the quantum theory of solids as applied to engineering materials. Topics selected will vary with the interests of the class, but the importance of quantized fields in crystals (phonons, magnons, plasnons, excitons, and polarons) and the interaction of these fields will be stressed. Prerequisites: EE 211 and Physics 316. 3 units. (Offered only upon sufficient demand.) *Pilkington*

EE 313. ***Magnetic Processes in Materials.*** Selected topics in magnetism. Cryomagnetics, spin wave resonance, interaction of superconductor and ferromagnetic materials, nonlinear spin wave theory, ferrimagnetic exchange, double exchange, superexchange, effects of finite dimensions and interfaces on basic properties of ferromagnets. Microwave applications. Prerequisite: EE 213, or permission of instructor. 3 units. (Fall semesters 1969, 1971.) *Artley*

EE 315. ***Semiconductor Devices.*** Derivation of the d-c and incremental electrical characteristics of p-n junction and junction transistors; equivalent circuit models; parameter determination; implication and limitations of models for describing device operation; thermal runaway; avalanche device operation; thin film, multi-junction and other modern devices. Prerequisite: EE 215. 3 units. *Hacker*

EE 321. ***Nonlinear Magnetic and Semiconductor Circuits.*** Mathematical description of nonlinear magnetic and semiconductor characteristics; transient and steady-state analysis and synthesis of nonlinear systems

with application to such topics as magnetic amplifiers, frequency converters, oscillators, computer logic, switching devices, and inverters. Prerequisite: permission of instructor. 3 units. (Spring semesters 1969, 1971.) *Wilson*

EE 324. ***Nonlinear Oscillations in Physical Systems.*** Analysis of phenomena encountered in free and forced oscillating systems: stability criteria, topological methods, degenerate systems and discontinuous theories, relaxation oscillations, asymptotic approaches. Emphasis on interdependence of physical and mathematical reasoning in analyzing nonlinear electrical and mechanical systems. Illustrative examples selected to meet interests of class. Prerequisite: EE 222. 3 units. (Spring semesters 1970, 1972.) *Wilson*

EE 342. ***Introduction to Optimal Control Theory.*** The state space formulation for both continuous and discrete linear systems. The theory of optimal control, as approached by the methods of calculus of variations, Pontryagin, and dynamic programming. Examples of two point boundary value problems, and minimization of quadradic functionals. Permission of instructor. 3 units. (Spring semesters 1969, 1971.) *Kerr*

EE 361, 362. ***Electrical Engineering Seminar.*** A weekly seminar in which graduate students and the faculty in electrical engineering meet to discuss research and professional activities. Presentations and discussions by faculty, students and persons visiting the campus are directed toward increased understanding of scientific and professional activities at local, regional, national and international levels. Selected articles from scientific and professional journals are reviewed by students with the objective of providing a continued overview of relevant and significant publications in the current literature. Although this course carries no graduate credit, it is expected that each graduate student will participate in the seminar for at least two semesters while in residence at Duke University. (Fall and spring semesters.) *Nolte*

EE 371. ***Advanced Electromagnetic Theory.*** An advanced treatment of topics in electromagnetic theory selected from the interests of the instructor and students. Representative topics are propagation in anisotropic media, plasma waves, antennas, and boundary value problems. Prerequisite: EE 272. 3 units. *Artley*

EE 373. ***Selected Topics in Field Theory.*** An advanced treatment of topics in generalized field theory selected from the interests of the instructor and the students. Representative topics are generalized fields, electromagnetic interactions, quantum electrodynamics, inhomogeneous media, and diffusion phenomena. Prerequisite: EE 272. 3 units. *Artley*

EE 375. ***Interaction of Electron Beams and Waves.*** Treatment of space-charge waves, slow-wave structures, and electron beams in various configurations such as traveling wave tubes, klystrons, and magnetrons; application of coupled-mode theory. Prerequisite: EE 272. Selected laboratory work. 3 units. (Fall semesters 1969, 1971.) *George*

EE 399. ***Special Readings in Electrical Engineering.*** Special individual readings in a specified area of study in electrical engineering. Prerequisite: approval of the Director of Graduate Studies. 1-3 units. *Staff*

Mechanical Engineering

Undergraduate Courses

Professor Chaddock, *Chairman*; Professor Kenyon, *Director of Undergraduate Studies*

ME 59. ***Materials and Processes.*** Elementary metallurgy and introduction to modern theories of the solid state; selection and properties of engineering materials and effect of forming processes upon properties. Prerequisite: Chem. 2. 3 s.h. (Not offered after 1967-68.) *Pearsall and Shepard*

ME 102. ***Thermodynamics II.*** A basic study of various thermodynamic phenomena and their use in engineering analysis and design. Examination of the dynamic properties and phenomena from macroscopic and microscopic points of view. Prerequisite: Egr 101. 3 s.h. *Elsevier*

ME 111. ***Physical Metallurgy.*** Extension of the principles of Egr 83 to the metallic state; atomic, experimental and thermodynamic approaches to metallurgy; phase transformations and hardening mechanisms, relationships between the structure of alloys and plastic behavior with emphasis on engineering alloy systems. Prerequisite: Egr 83. 3 s.h. *Shepard*

ME 112. ***Polymer Science.*** Extension of the principles of Egr 83 to high molecular weight polymers, especially those which have significant engineering applications; structure and properties of polymers; polymerization mechanisms; properties of commercial polymers; polymer processing. Prerequisite: Egr 83. 3 s.h. *Pearsall*

ME 122. ***Transport Phenomena.*** A unified treatment of momentum, energy and mass transport from the continuum viewpoint, emphasizing the formulation and solution of engineering problems. Conservation laws, constitutive equations, their combinations, and methods of problem solution. Prerequisites: Egr 133, Egr 143, Math 111. 3 s.h. *Chaddock*

ME 128.* ***Dynamics of Gases.*** The flow of compressible fluids at high velocities. One-dimensional compressible flow: area change; normal shock; friction and heat transfer; Mach number. Prerequisite: ME 102. Concurrent: ME 106. 3 s.h. *Buzzard*

ME 133. ***Mechanical Design I.*** Study of the geometry of mechanisms with regard to the motions obtained; introduction to toothed gearing,

* Offered only upon sufficient demand; enrollment limited.

cams, linkages, and intermittent motion devices. Kinematics and kinetics of linkages; the instant center; velocity, acceleration, and inertia force polygons. Prerequisite: Math 63. Concurrent: Egr 123. Two class sessions and one computation or laboratory session. 3 s.h. *Nash*

ME 134. *Mechanical Design II.* Application of kinematic and kinetic analyses to practical problems in the design of machine elements. Study of stress, deflection, materials and factors of safety as related to specific function and shape of machine elements. Two class sessions per week. Prerequisite: ME 133. 2 s.h. *Linderoth*

ME 135.* *Vibration Control.* An introduction to the dynamics of mechanical systems; equilibrium, stability, lumped and distributed systems. System analysis by classical differential equations, mechanical impedance, and computer methods. Prerequisites: Math 63 and ME 133. 3 s.h. *Macduff*

ME 136. *Response of Systems.* System design for optimum dynamic response. Instrumentation and development of mathematical models from physical systems; operational and computer techniques; matrix methods for lumped and distributed systems; introduction to nonlinear phenomena. Two class sessions and one computation or laboratory session. Concurrent: Math 111. 3 s.h. *Macduff*

ME 153.* *Heating, Air Conditioning and Refrigeration.* Principles of thermodynamics, heat transfer and fluid flow applied to comfort and industrial air conditioning. Cycles and equipment for heating, cooling, and humidity control. Air transmission and distribution. Modern vapor compression, absorption and low temperature refrigeration cycles and systems. Prerequisites: Egr 133 and 143 and ME 102. 3 s.h. *Elsevier*

ME 156. *Combustion Engines.* A study of cycles, fuels, and fuel mixtures in piston, ram jet, and rocket engines. Comparison of real and theoretical cycles; carburetion and fuel injection systems; modern developments. Prerequisite: ME 102. 3 s.h. *Elsevier*

ME 159-160. *Senior Mechanical Engineering Laboratory.* Laboratory determination of heat flow and operating characteristics of engines, fans, pumps, and other power and refrigeration plant components; vibrational systems, control systems, analog methods. Student planning and reporting of original experiments. 2 s.h. (Not offered after 1967-68.) *Staff*

ME 161. *Mechanical Engineering Laboratory.* Laboratory experience designed to involve the student in real engineering problems and to reinforce his understanding of some of the basic principles in the areas of thermodynamics, systems response, heat transfer and fluid mechanics. One class session and one three-hour laboratory session each week. Prerequisite: senior standing. 2 s.h. *Buzzard*

ME 165-166. *Special Topics in Mechanical Engineering.* Study arranged on a special engineering topic, in which the faculty has particular

* Offered only upon sufficient demand; enrollment limited.

interest and competence as a result of its research and professional activities. Prerequisite: permission of the instructor and Director of Undergraduate Studies. 1-3 s.h. *Staff*

ME 167.* ***Industrial Engineering.*** A study of the organization and functioning of industries; function of engineering in industry; job analysis and self evaluation; professional and executive responsibility of the mechanical engineer. Prerequisite: senior standing. 3 s.h. *Lewis*

ME 171. ***Response of Physical Systems.*** An introduction to the basic fundamentals of instrumentation and of the control of processes and systems with emphasis on correlation of analysis and experimental results. Concurrent: Math 111. 3 s.h. (Not offered after 1967-68.) *Macduff*

ME 172.* ***Kinematics of Mechanisms.*** An extension of the kinematics of mechanisms begun in ME 133. Further analysis of velocities and accelerations in a moving rigid link; techniques for determining velocities and accelerations in mechanisms; introduction to kinematic and geometric synthesis. Prerequisite: ME 133. 3 s.h. *Nash*

ME 173-174. ***Mechanical Engineering Seminar.*** A course designed to keep the students abreast of progress in the engineering field and to develop their ability to express ideas effectively in speech and writing. Open to seniors only. 2 s.h. (Not offered after 1967-68.) *Elsevier, Kenyon, and Linderoth*

ME 177.* ***Computer Techniques for Simulation and Design.*** Modern analog and digital computation used in the design of advanced engineering systems. Problems described by linear and nonlinear differential and algebraic equations will be solved. Linkage-cam mechanisms, heat exchangers, rocket nozzles, missile roll control, and aircraft stability are typical problem topics. 3 s.h. *Wright*

ME 182.* ***Fundamentals of Nuclear Engineering.*** Review of nuclear physics, nuclear interactions and cross sections, neutron induced chain reactions, shielding, hazards, isotope utilizations, reactor systems, and power reactors. Prerequisite: permission of instructor. 3 s.h. *Kenyon*

ME 183.* ***Power Plants.*** Basic concepts of thermodynamics, heat transfer and fluid flow are combined with industrial data for the consideration of real power plant problems. Selection of steam generators, prime movers, fans, pumps, heaters, and piping systems with regard to engineering and economic points of view. Prerequisite: ME 102. 3 s.h. *Kenyon*

ME 197-198. ***Projects in Mechanical Engineering.*** This course may be assigned by the Chairman of the Department to outstanding seniors who express a desire for such work and who have shown aptitude for research in one distinct field of mechanical engineering. Prerequisite: 3.0 average and senior standing. 1-6 s.h. *Staff*

* Offered only upon sufficient demand; enrollment limited.

*Graduate Courses**

Professor Chaddock, *Chairman*; Professor Pearsall, *Director of Graduate Studies*; Professors Kenyon, Linderoth, Macduff, and Meriam; Associate Professors Boyle, Clark, Elsevier, Harman, Mixon (Adjunct) and Murray (Adjunct); Assistant Professors Buzzard, Shepard, Werner and Wright

ME 202. *Theoretical Thermodynamics.* Classical thermodynamics and thermodynamics continuum properties for real substances, equilibrium, introduction to statistical thermodynamics. 3 units. *Elsevier and Harman*

ME 203. *Introduction to Advanced Mechanics.* A comprehensive introduction to advanced theory and application in advanced mechanics with emphasis on stability, space kinematics, and kinetics of particles and rigid bodies, generalized motion equations for constant and time-dependent mass systems, and generalized coordinates. 3 units. *Meriam*

ME 211. *Theoretical and Applied Polymer Science.* An advanced course in materials science and engineering, dealing specifically with the structure and properties of polymers. Particular attention is paid to recent developments in the processing and use of modern plastics and fibers. Product design is considered in terms of polymer structures, processing techniques, and properties. 3 units. *Pearsall*

ME 221. *Compressible Fluid Flow.* The concepts and analysis for flow of gases in subsonic to hypersonic regime. Two-dimensional flow; oblique shocks; experimental techniques. 3 units. *Buzzard and Harman*

ME 222. *Heat Transfer.* Steady-state and transient solutions of the general heat conduction equation. Development of the equations for transport of energy by fluid motion. Principle of similarity and dimensional analysis in convective energy transport. Solutions of the boundary layer equations. The laws of radiation heat transfer and radiation heat exchange. 3 units. *Chaddock and Werner*

ME 226. *Intermediate Fluid Mechanics.* A survey of the principal concepts and equations of fluid mechanics. Fluid properties. Statics. Basic equations for the control volume. The differential equations of fluid motion. Stream function. Irrotational flow. Navier-Stokes equations. Kelvin's and Crocco's theorem. Applications to two-dimensional incompressible potential flow and to viscous flow in boundary layers. Prerequisite: Egr 143. 3 units. *Buzzard*

ME 231. *Systems Response and Control.* Methods, applicable to design, of obtaining parameters for strength, response, and stability studies of mechanical systems. Analysis of closed loop control systems with linear transfer functions; electrical and mechanical analogs; introduction to determination of transfer function from input-output characteristics. 3 units. *Linderoth and Macduff*

*Offered only upon sufficient demand; enrollment limited.

ME 233. *Fluid Control Systems.* A design oriented course concerned with hydraulic and pneumatic feedback control systems. Basic control system characteristics; linearized transfer functions; determination of transfer function from computation and experiment; position, velocity, and acceleration feedback devices; transducers; DC and AC hydraulic and pneumatic amplifiers. 3 units. *Macduff*

ME 235. *Advanced Mechanical Vibrations.* Analytical and experimental procedures applied to design of machines and systems for adequate vibration control. Determination of eigenvalues and eigenvectors by iteration and computer techniques; transfer matrices applied to lumped and distributed systems; analytical and numerical methods of obtaining the pulse response of plane and three dimensional multi-mass systems; convolution and data processing; introduction to random vibration. 3 units. *Macduff*

ME 251. *Refrigeration and Cryogenics.* Theory and experiment in the evaluation of the thermodynamic properties of refrigerants and cryogenic fluids. Thermodynamics of vapor compression, air cycle, absorption and thermoelectric refrigeration. Production of low and very low temperatures, helium liquifiers. Two-phase flow processes. Heat exchange for refrigeration and cryogenic transfer. 3 units. *Chaddock*

ME 255. *Energy Conversion.* Principles, thermodynamics, and classification of energy conversion devices. Introduction to semi-conductors, thermoelectric generators, photovoltaic generators, thermionic generators, magnetohydrodynamic generators, fuel cells, and other energy conversion devices. 3 units. *Elsevier and Harman*

ME 265. *Advanced Topics in Mechanical Engineering.* Opportunity for study of advanced subjects related to programs within Mechanical Engineering tailored to fit the requirements of a small group. Prerequisites: Approval of the Director of Graduate Studies and the instructor under whom work will be done. 1 to 3 units. *Members of the graduate staff*

ME 270. *Theory of Lubrication and Bearing Desgin.* A study and analysis of the theory of hydrodynamic and hydrostatic lubrication will be presented. The dynamics of bearing loading, bearing design and materials will be examined in their relationships to the theory of lubrication. Properties of lubricants will be reviewed. The student will have ample opportunity to put theory into practice with real bearing problems taken from industrial machinery, construction equipment, transportation media and wherever relative motion is required between adjacent surfaces. 3 units. *Linderoth*

ME 280. *Nuclear Reactor Power Cycles.* Basic reactor principles and types. Examination of most feasible thermodynamic cycles for use with both stationary and mobile power plants. Consideration of safety shielding, heat transfer, fluid flow and materials problems unique to reactor design. 3 units. *Kenyon*

ME 302. *Advanced Thermodynamics.* Classical thermodynamics of inherently irreversible processes. Statistical thermodynamic analysis of properties of real substances and processes. Principles of general thermodynamics. 3 units. *Harman*

ME 311. *Behavior of Crystalline Solids.* An advanced treatment of the dependence of structure on atomic bonding, and of properties on structure in crystalline solids. Crystal structures; phase diagrams and solid-state thermodynamics; physical properties; mechanical properties; kinetics of thermal treatments. 3 units. *Pearsall*

ME 321. *Boundary Layer Theory.* Development of the boundary layer simplifications. Analysis of the laminar incompressible hydrodynamic and thermal boundary layers. Nonsteady incompressible boundary layers. An introduction to compressible boundary layers. The origin of turbulence. 3 units. *Buzzard*

ME 323. *Convective Heat Transfer.* Models and equations for fluid motion, the general energy equation, and transport properties. Exact, approximate, and boundary layer solutions for laminar flow heat transfer problems. Use of the principal of similarity and analogy in the solution of turbulent flow heat transfer. Two-phase flow, nucleation, boiling, condensation, and simultaneous heat and mass transfer. Prerequisites: Math 285, ME 222 or equivalent. 3 units. *Chaddock*

ME 372. *Finite Element Techniques in Design.* Finite element methods applied to design problems in stress analysis; temperature distribution; and flow problems. Derivation of state vectors and transfer matrices for rectangular and triangular elements; accuracy and computation methods; comparison with difference equation methods and available analytical results. 3 units. *Macduff*

Non-Engineering Subjects in Core Curricula

Chem 1, 2. *General Inorganic Chemistry.* Lectures and recitations on the elementary principles of chemistry and on the structure, properties, preparation and uses of the elements and their compounds. The laboratory work includes qualitative analysis of some of the more common metals. Two lectures, one recitation, and three laboratory hours throughout the year. Chemistry 1 is a prerequisite for Chemistry 2. Prerequisite: qualification for Math 21. 8 s.h.

Engl 1-2. *Freshman Composition.* First semester, weekly expository themes based on British and American prose fiction and non-fiction; one general lecture, one section meeting, and one individual conference each week. Second semester, frequent writing assignments based on readings in several genres; sections in Poetry, Novel, Drama, or Classical Epic meet

thrice weekly; the student will apply for a section giving instruction in the genre he wishes to study. 6 s.h.

Math 21, 22. ***Introductory Calculus.*** Real numbers, rectangular and polar coordinates, trigonometric and inverse trigonometric functions, logarithmic and exponential functions, conic sections, vectors, limits, derivatives, maxima and minima, methods of integration, areas, volumes, moments, centroids, indeterminant forms, improper intervals. Prerequisite: three units of college preparatory mathematics. Math 21 is prerequisite for Math 22. 6 s.h.

Math 51. ***Introduction to Digital Computation.*** Flow charts; binary arithmetic; an assembly language; program structures, subroutines, linkages, recursion; data structures, arrays, polynomials; an algorithmic language; numerical linear algebra, matrix inversion, linear programming, estimation of parameters by criteria of Gauss and Chebyshev. (A fee of $8.00 is charged for this course.) Prerequisite: three units of college preparatory mathematics 3 s.h.

Math 63. ***Intermediate Calculus.*** Taylor's formula, infinite series, partial derivatives, solid analytic geometry with vectors, functions of several variables, multiple integrals. Prerequisite: Math 22. 3 s.h.

Math 111. ***Applied Mathematical Analysis I.*** Ordinary and partial linear differential equations with constant coefficients, Fourier series and their applications, vectors. Not open to students who have had Math 131. Prerequisite: Math 63. 3 s.h.

Math 112. ***Applied Mathematical Analysis II.*** Complex variables, residues, conformal mapping, matrices, Laplace and Fourier Transforms and their applications. Prerequisite: Math 63. 3 s.h.

Phys 51-52. ***General Physics.*** Basic principles of general physics treated more quantitatively than Physics 1-2. Designed for students entering medicine, engineering, and the sciences. Not open for credit to students who have completed Physics 1-2 or 41-42. Students planning to major in physics should enroll in Physics 41-42 in their freshman year. Three lecture-recitations and one three-hour laboratory period each week. Prerequisites: Mathematics 21, 22 or equivalent (may be taken concurrently). 8 s.h.

Phys 161. ***Modern Physics.*** Review of electromagnetic fields, relativity, quantum phenomena, atomic and molecular spectra, solids, and nuclear physics. Three lectures each week. Prerequisites: Phys 51-52 and Math 22. Phys 161 is prerequisite for 162. 6 s.h.

For additional non-engineering courses consult the *Bulletin of Undergraduate Instruction.*

Chem 151, 152. ***Organic Chemistry.*** An introduction to the study of the compounds of carbon in which the chemistry of both aliphatic and aromatic componds is considered. Laboratory experiments are selected to illustrate the more important reactions and preparations of organic compounds. Two lectures, one recitation, and three laboratory hours. Prerequisite: Chem 42 or 61. Chem 151 is prerequisite for 152. 8 units.

Math 221, 222. ***Numerical Analysis.*** Scientific programming, numerical analysis, error analysis, interpolation, numerical differentiation and integration, summation, numerical solutions of ordinary differential equations, real and complex roots of equations, solution of simultaneous equations and matrix inversion, calculation of eigenvalues and eigenvectors, numerical solution of partial differential equations, linear programming and least squares techniques. Prerequisite: Math 63 for 221, and 221 for 222. 6 units.

Math 283. ***Applied Mathematical Statistics.*** Basic probability concepts, sample space, discrete and continuous events, permutations and combinations, conditional and marginal probability, discrete and continuous distributions, expected values and moments, sampling distributions, estimations, hypothesis testing, confidence intervals, basic queueing theory. Prerequisite: Math 63. 3 units.

Math 284. ***Least Squares Analysis of Linear Models.*** General linear models; geometrical interpretations; multiple regression; one-way and multi-way analysis of variance; fixed, random, and mixed models; experimental design models; analysis of covariance; introduction to non-linear models. Prerequisite: Math 136 or 283. 3 units.

Math 285. ***Applied Mathematical Methods I.*** Vectors, line and surface integrals, tensors, complex variables, differential and integral equations. Prerequisite: Math 63. 3 units.

Math 286. ***Applied Mathematical Methods II.*** Wave equation, Fourier series, heat equations, telegraphic equations, Legendre polynomials, Bessel functions, Schrödinger's equation. Prerequisite: Math 63. 3 units.

Math 289. ***Applications of Stochastic Processes I.*** Recurrent events, random walk, Markov chains and processes, queueing theory, branching and diffusion processes. Prerequisite: Math 135 and 140, or consent of instructor. 3 units.

Math 290. ***Applications of Stochastic Processes II.*** Linear operators, spectral representations, time series, multivariate analysis, auto-regressive schemes, Gaussian processes, cross-correlation functions, smoothing, filtering, prediction, Wiener-Hopf equation, diffusion processes, Fokker-Planck equation, first-passage times. Prerequisite: Math 289 or consent of the instructor. 3 units.

Math 291-292. ***Analysis I, II.*** Theory of Analytic Functions, measure

and integration theory, introduction to functional analysis. Prerequisite: Math 218 or 140, or consent of the instructor. 6 units.

M374. *Cellular Neurophysiology.* Deals with current concepts of structure and electrical impulse propagation in nerves. The powerful new experimental techniques used in the study of isolated membranes and the resulting theoretical models are covered. 2 units.

M377. *Cellular Transport Processes.* A sequential study of the following topics: The physical chemistry of transport processes which occur in living cells (e.g. diffusion, flow, electric current); contemporary knowledge of the molecular mechanism of salt and water transport across cell membranes with special reference to the conversion of chemical bond energy to transport work in active transport, the integration of transport processes in individual plasma membranes to accomplish regulation of cytoplasmic salt and water composition and cell volume, as well as the secretion of fluids across epithelial cell layers in organs specialized for this function (intestine, kidney). 2 units.

Phys 221, 222. *Theoretical Physics.* Mechanics of particles and of rigid bodies, elasticity, fluids dynamics, electrodynamics, optics, relativity, thermodynamics, statistical mechanics, wave mechanics. Prerequisite: Math 285, 286 or equivalent to be taken at least concurrently. 6 units.

Z 252. *Comparative Physiology.* The physiological mechanisms of animals studied on a comparative basis. Prerequisite: Zoology 151 or equivalent. 4 units.

For additional courses consult the *Bulletin of The Graduate School of Arts and Sciences.*

Index

Absences, 46
Academic Class Standing, 50
Academic Regulations, 46, 60
Activities, 29, 47
Administration
  General University, vii
  Engineering, vii
Administrative Council, Engineering, xii
Admission, Graduate, 35
  Prerequisites, 35
  Procedure, 35
Admission, Undergraduate, 33
  Advanced Placement, 24, 49
  Advanced Standing, 34
  By Examination, 33
  Early Decision Plan, 34
  Procedure, 34
  Readmission, 35
  Requirements, 33
  Special Students, 35
Advanced Placement, 24
Advanced Standing, 34
Aid, Student, 41, 42, 43, 44
Air Force Reserve Corps, 23, 39
Appointments Office, 29
Assistance, Graduate, 43, 44
Attendance, 46
Audit, Course, 46
Awards, 31, 43, 44

Bachelor of Science in Engineering, Requirements, 6, 7, 8, 11, 14, 17, 19
Biomedical Engineering, 18
  Courses of Instruction, 19
  Curriculum, 19
  Faculty, xii
  Graduate Program, 22
Board of Visitors, xiv
Boarding Accommodations, 27, 39

Calendar of the College, v
Chemistry Courses, 85, 87
Civil Engineering, 9
  Courses of Instruction, 11, 67
  Curriculum
    Graduate, 11, 70
    Undergraduate, 11, 67
  Facilities, 10
  Faculty, ix
  Graduate Program, 11, 20
  Undergraduate Program, 11
Class Standing, 50
Clerical Staff, xvii
Commencement, 51
Committees, Faculty, xiii
Common Core Courses, 7, 8, 65
Conduct, 63
Continuation in College, Requirements for, 50
Cost, per year, 37, 40
Council,
  Engineering Administrative, xii
  Engineering Faculty, xiii
Counseling Center, 29
Course Changes, 46
Course Requirements, 46
Course Load (Requirements), 46
Courses of Instruction
  Chemistry, 85, 87
Civil Engineering, 11, 67
  Common Core, 7, 65
  Electrical Engineering, 14, 73
  English, 85
  Mathematics, 86, 87

Mechanical Engineering, 17, 80
Physics, 86, 88
Credit, 48, 60
Curriculum
Civil Engineering, 11, 67, 70
Electrical Engineering, 14, 73, 75
Mechanical Engineering, 17, 80, 83
Biomedical Engineering, 19

Degrees, 6, 54, 56
Degrees, Requirements for
Bachelor of Science, 6
Master of Science, 54
Doctor of Philosophy, 56
Dining Facilities, 28, 40
Distinction, Graduation with Departmental, 25, 51
Doctor of Philosophy Degree, 20, 56
Dormitories
Men, 27
Women, 27
Early Decision Plan, 34
Electrical Engineering, 12
Courses of Instruction, 14, 73
Curriculum
Graduate, 15, 75
Undergraduate, 14, 73
Facilities, 13
Faculty, x
Graduate Program, 15, 21
Undergraduate Program, 14
Emeritus Faculty, xiii
Employment, 43
Engineering
Administration, vii
Administrative Council, xii
Biomedical Engineering, 18
Civil, 9
Committees, xiii
Electrical, 12
Faculty, ix
Faculty Council, xiii
Faculty Emeritus, xiii
Lecture Series, 30
Library, 5
Mechanical, 15
Programs, 6
Staff, ix
Student Publication, 30
Subjects, Common Core, 65
Engineers' Radio Association, 30
Engineers' Student Government, 29
English Courses, 7, 85
Enrollment, 33
Examinations, 48, 56, 58
Expenses, 37-40

Facilities
Civil Engineering, 10
Electrical Engineering, 13
Mechanical Engineering, 16
Faculty, ix
Faculty Committees, xiii
Faculty Council, Engineering, xiii
Faculty Emeritus, xiii
Fees, 37-40
Fellows, xvi
Financial Information, 37
Food Services, 28, 40
Foreign Students, 36

General University Administration, vii
Government, Student, 29
Grade Reports, 47
Grading, 47, 61
Graduate Admission, 35
Graduate Assistance, 43, 44
Graduate Assistants, xiv, 43
Research, xv
Teaching, xiv
Teaching/Research, xv
Graduate Program
Civil Engineering, 11, 20
Electrical Enginering, 15, 21
Mechanical Engineering, 17, 21
Graduate School
Academic Regulations, 60
Admission, 35
Assistance, 43
Registration, 52
Graduation
From School, Requirements for, 50
With Departmental Distinction, 25, 51
With Honors, 51
Guidance
The Counseling Center, 29

History, Requirement, 7
History, School of Engineering, 3
Honor Societies
Engineering, 30
General, 31
Honors, 51
Hours, Semester, 46
Housing, 27
Humanities, 7

Income Tax, 44
Incomplete Work, 48

Independent Study, 25
Instructional Staff, ix
Interdisciplinary Major, 18

Laboratories
  Civil Engineering, 10
  Electrical Engineering, 13
  Mechanical Engineering, 16
Leave of Absence, 47
Lecture Series, 30
Library
  Description, 5
  Staff, xiv, xvii
Living Accommodations, 27
Living Expenses, 39
Loans, 42

Master of Science Degree, 20, 54
Mathematics Courses, 7, 86, 87
Matriculation, 33
Mechanical Engineering, 15
  Courses of Instruction, 17, 80
  Curriculum
    Graduate, 17, 21, 83
    Undergraduate, 17, 80
  Facilities, 16
  Faculty, xi
  Graduate Program, 17, 21
  Undergraduate Program, 17
Medical Care, 28

Natural Science Requirement, 7
Naval Reserve Corps, 23
Non-Engineering Subjects, 85

Officers of Administration, vii
Officers of the School, vii
Organization, School, 3
Organizations, 29
Physical Education, 7
Physical Plant, 5
Physics Courses, 86, 88
Prizes, 31
Professional Societies, 30
Programs of Study, 6
  Biomedical Engineering, 19
  Common Core, 8
  Civil Engineering, 11, 20
  Electrical Engineering, 14, 20
  Interdisciplinary, 18
  Mechanical Engineering, 17, 21
  Special Curricular, 25
Publication, Student, 30
Public Lectures, 30

Quality Point Credit, 50

Radio Association, 30
Readmission, 35
Reciprocal Agreement with UNC, 26
Registration
  Graduate, 52
  Undergraduate, 45,
Regulations, Academic, 46, 54, 60
Regulations, Athletic and Other Activities, 47
Regulations, Nonacademic, 63
Reports, grade, 47
Requirements, Course, 46
Research Assistants, xv, 43
Research Associates, xiii, xiv
Reserve Officers Training Corps, 23
Residence Requirements, 49, 54, 57
ROTC, 23, 39

Scholarship Prizes, 31
Scholarships, 41
School of Engineering
  Calendar, v
  Graduate Program, 20
  History, 3
  Organization, 3
  Physical Plant, 5
  Relationship to the University, 2
  Undergraduate Program, 6
Semester Hours, 46
Social Science Requirement, 7
Societies
  Honor, 30
  Professional, 30
Special Students, 39
Staff (Faculty)
  Civil Engineering, ix
  Electrical Engineering, x
  Mechanical Engineering, xi
  Div. of Biomedical Engineering, xii
  Supporting, xiv
Stipends, 44
Student Aid, 41-44
Student Government, 29
Student Employment, 43
Student Life, 27
Student Publication, 30
Study Abroad, 24
Supporting Staff, xiv

Teaching Staff, ix
Technical Staff, xvii

1968

JULY

S	M	T	W	T	F	S
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28	29	30	31			



General Catalogue
1967–1968

BULLETIN OF DUKE UNIVERSITY

Annual Bulletins

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BULLETIN OF DUKE UNIVERSITY

General Catalogue

Academic Year 1967-1968

Announcements for 1968–1969

Durham, North Carolina 1968

Calendar of Colleges iv
History v
Government vii
Alumni Organizations xx
Gifts and Bequests xxii
Bureau of Public Information xxiv

Officers, Faculty, and Staff

The Undergraduate Colleges

The Divinity School

The School of Engineering

The School of Forestry

The Graduate School of Arts and Sciences

The School of Law

The School of Medicine

The School of Nursing

The Summer Session

Appendix

Degrees and Honors 1
Enrollment Statistics 28
Index 31

University Calendar 1968-1969

September

13 Friday, 7:30 p.m.—Orientation begins: Assemblies for all new students entering Trinity College, the Woman's College, the School of Engineering, and the School of Nursing
16 Monday—Registration and matriculation of all students of Trinity College, the Woman's College, the School of Engineering, and the School of Nursing, who have not pre-registered
18 Wednesday, 8:00 p.m.—University Convocation. Indoor Stadium
18 Wednesday—Final Registration of pre-registered students
19 Thursday, 8:10 a.m.—Fall semester classes begin

November

2 Saturday—Last day for reporting six-weeks grades
11–14 Pre-registration for Spring Semester 1969
27 Wednesday, 12:30 p.m.—Thanksgiving recess begins

December

2 Monday, 8:10 a.m.—Classes are resumed
11 Wednesday—Founders' Day
21 Saturday, 12:30 p.m.—Christmas recess begins

January

6 Monday, 8:10 a.m.—Classes are resumed
11 Saturday, 12:30 p.m.—Fall semester classes end
15 Wednesday—Final Examinations begin
24 Friday—Final Examinations end
29 Wednesday—Registration and matriculation of new students
30 Thursday—Last day for matriculation for the spring semester
31 Friday—Spring semester classes begin

March

12 Wednesday—Last day for reporting six-weeks grades
22 Saturday, 12:30 p.m.—Spring recess begins
31 Monday, 8:10 a.m.—Classes are resumed

April

7–10 Pre-registration for Summer Session and Fall Semester 1969

May

15 Thursday, 5:00 p.m.—Spring semester classes end
19 Monday—Final examinations begin
28 Wednesday—Final examinations end
31 Saturday—Commencement begins

June

1 Sunday—Commencement Sermon
2 Monday—Graduating Exercises

History

Duke University is built about a group of colleges which have their roots deep in the past. It was founded more than one hundred years ago when a number of earnest citizens from Randolph and adjacent counties assembled in a log school house to organize an educational society. They wished to provide lasting support for the local academy founded a few months before by an energetic son of North Carolina, Brantley York.

Moved by "no small share of philanthropy and patriotism," these men set forth their belief "that ignorance and error are the bane not only of religious but also of civil society" and that they "rear up almost an impregnable wall between man and the happiness he so ardently pants after." On that basis they formally adopted a constitution for the Union Institute Society. Thus in February, 1839, the academy became Union Institute. Twelve years laters it was reorganized as Normal College expressly to train teachers. In order to expand its operations still further, the school was again reorganized in 1859 as Trinity College, a small liberal arts college. In 1892 it moved from the fields of Randolph County to the growing city of Durham. Thirty-two years later the College grew into Duke University. With increasing enrollment and the development of specialized needs, The Woman's College was formed in 1925 and the College of Engineering in 1938.

As the University developed around the core of the colleges, the Graduate School of Arts and Sciences expanded in number of students and in areas of instruction and research; the School of Law of Trinity College became the Duke University School of Law; and other professional schools were established. The Divinity School was organized in 1926, the School of Medicine and the School of Nursing in 1930, and the School of Forestry in 1938.

From academy to university the basic principles have remained constant. The University motto, *Eruditio et Religio*, reflects a fundamental faith in the union of knowledge and religion, the advancement of learning, the defense of scholarship, the love of freedom and truth, a spirit of

tolerance, and a rendering of the greatest service to the individual, the state, the nation, and the church. Through changing generations of students the objective has been to encourage each individual to achieve to the extent of his capacities an understanding and appreciation of the world in which he lives, his relationship to it, his opportunities, and his responsibilities.

Government

1. The Indenture of Trust by Which the University Was Created

Among the provisions of James B. Duke's Indenture of Trust was an educational institution to be known as Duke University, to the building and support of which he made provision at the time of execution of the Indenture and later by additions thereto by the operation of his Will. In respect to Duke University the Indenture contains the following provisions:

I. (In Article FOURTH) The Trustees hereunder are hereby authorized and directed to expend as soon as reasonably may be not exceeding Six Million Dollars of the corpus of this trust in establishing at a location to be selected by them within the State of North Carolina an institution of learning to be known as Duke University, for such purpose to acquire such land and erect and equip thereon such buildings according to such plans as the Trustees may in their judgment deem necessary and adopt and approve for the purpose to cause to be formed under the laws of such state as the Trustees may select for the purpose a corporation adequately empowered to own and operate such properties under the name of Duke University as an institution of learning according to the true intent hereof, and convey to such corporation when formed the said lands, buildings and equipment upon such terms and conditions as that such corporation may use the same only for such purposes of such universities and upon the same ceasing to be so used then the same shall forthwith revert and belong to the Trustees of this trust as and become a part of the corpus of this trust for all the purposes thereof.

However, should the name of Trinity College, located at Durham, North Carolina, a body politic and incorporate, within three months from the date hereof (or such further time as the Trustees hereof may allow) be changed to Duke University, then, in lieu of the foregoing provisions of this division "FOURTH" of the Indenture as a memorial to his father,

Washington Duke, who spent his life in Durham and whose gifts, together with those of Benjamin N. Duke, the brother of the party of the first part, and of other members of the Duke family, have so largely contributed toward making possible Trinity College at that place, he directs that the Trustees shall expend of the corpus of this trust as soon as reasonably may be a sum not exceeding Six Million Dollars in expanding and extending said University, acquiring and improving such lands, and erecting, removing, remodeling and equipping such buildings, according to such plans, as the Trustees may adopt and approve for such purpose to the end that said Duke University may eventually include Trinity College as its undergraduate department for men, a School of Religious Training, a School for Training Teachers, a School of Chemistry, a Law School, Co-ordinate College for Women, a School of Business Administration, a Graduate School of Arts and Sciences, a Medical School and an Engineering School, as and when funds are available.

II. (In Article FIFTH) Thirty-two per cent of said net amount not retained as aforesaid for addition to the corpus of this trust shall be paid to that Duke University for which expenditures of the corpus of the trust shall have been made by the Trustees under the "Fourth" division of this Indenture so long as its name shall be Duke University and it shall not be operated for private gain, to be utilized by its Board of Trustees, in defraying its administration and operating expenses, increasing and improving its facilities and equipment, the erection and enlargement of buildings and the acquisition of additional acreage for it, adding to its endowment or in such other manner for it as the Board of Trustees of said institution may from time to time deem to be of its best interests, provided that in case such institutions shall incur any expense of liability beyond provisions already in sight to meet same, or in the judgment of the Trustees under this Indenture be not operated in a manner calculated to achieve the results intended hereby the Trustees under this Indenture may withhold the whole or any part of such percentage from said institution so long as such character of expense or liabilities or operation shall continue, such amounts so withheld to be in whole or in part either accumulated and applied to the purposes of such University in any future year or years, or utilized for the other objects of this Indenture, or added to the corpus of this trust for the purpose of increasing the principal of the trust estate, as the Trustees may determine.

III. (In Article SEVENTH) I have selected Duke University as one of the principal objects of this trust because I recognize that education, when conducted along sane and practical, as opposed to dogmatic and theoretical, lines, is, next to religion, the greatest civilizing influence. I request that this institution secure for its officers, trustees, and faculty, men of such outstanding character, ability, and vision as will insure its attaining and maintaining a place of real leadership in the educational

world, and that great care and discrimination be exercised in admitting as students only those whose previous records show a character, determination, and application evincing a wholesome and real ambition for life. And I advise that the courses at this institution be arranged, first, with special reference to the training of preachers, teachers, lawyers and physicians, because these are most in the public eye, and by precept and example can do most to uplift mankind, and second, to instruction in chemistry, economics, and history, especially the lives of the great of earth, because I believe that such subjects will most help to develop our resources, increase our wisdom and promote human happiness.

IV. (In Article THIRD) as respects any year or years and any purpose or purposes for which this trust is created (except the payments hereinafter directed to be made to Duke University) the Trustees in their uncontrolled discretion may withhold the whole or any part of said incomes, revenues and profits which would otherwise be distributed under the "Fifth" division hereof, and either (1) accumulate the whole or any part of the amount so withheld for expenditures (which the Trustees are hereby authorized to make thereof) for the same purpose in any future year or years, or (2) add the whole or any part of the amounts so withheld to the corpus or the trust, or (3) pay, apply and distribute the whole or any part of said amounts to and for the benefit of any one or more of the other purposes of this trust, or (4) pay, apply and distribute the whole or any part of said amounts to or for the benefit of any such like charitable, religious or educational purpose within the State of North Carolina or the State of South Carolina, or any such like charitable hospital purpose which shall be selected therefor by Trustees called for the purpose, complete authority and discretion in and for such selection and utilization being hereby given the Trustees in the premises.

2. *The Charter of the University*

Section 1. That A. P. Tyer, J. H. Southgate, B. N. Duke, G. A. Oglesby, V. Ballard, J. A. Long, J. F. Burton, J. N. Cole, F. A. Bishop, J. G. Brown, C. W. Toms, J. W. Alspaugh, W. R. Odell, J. A. Gray, F. Stikeleather, Kope Elias, S. B. Turrentine, P. H. Hanes, T. F. Marr, G. W. Flowers, M. A. Smith, R. H. Parker, W. J. Montgomery, F. M. Simmons, O. W. Carr, R. A. Mayer, N. M. Jurney, Dred Peacock, B. B. Nicholson, W. G. Bradsher, E. T. White, T. N. Ivey, J. B. Hurley, R. L. Durham, W. C. Wilson, and their associates and successors shall be, and continue as they have been, a body politic and corporate under the name and style of DUKE UNIVERSITY, and under such name and style shall have perpetual existence and are hereby invested with all the property and rights of property which now belong to the said corporation, and said corporation shall henceforth and perpetually, by the name and style of

DUKE UNIVERSITY, hold and use all the authority, privileges, and possessions it had or exercised under any former title and name, and be subject to all recognized legal liabilities and obligations now outstanding against such corporations.

Section 2. That such corporation is authorized to receive and hold by gift, device, purchase or otherwise, property, real and personal, to be held for the use of said University and its dependent schools or for the use of either or both (as may be designated in the conveyance or will).

Section 3. That the Trustees shall be thirty-six in number of whom twelve shall be elected by the North Carolina Conference of the M. E. Church, South; twelve by the W. N. C. Conference of the said church; and twelve by the graduates of said University; *Provided*, however, That no person shall be elected a Trustee till he has first been recommended by a majority of the Trustees present at a regular meeting; and the Trustees shall have power to remove any member of their body who may remove beyond the boundary of the State or who may refuse or neglect to discharge the duties of a Trustee. The term of office of Trustees shall be six years, and they shall be so arranged that four Trustees shall be elected by each Conference and four by the graduates every two years. The Trustees shall regulate by bylaws the manner of election of Trustees to be chosen by the graduates. Should there exist a vacancy by death, resignation, or otherwise of any Trustee, the same shall be filled for the unexpired term by the Board of Trustees. That the present Trustees shall continue and remain in office during the term for which they have been heretofore respectively elected.

Section 4. That the said corporation shall be under the supervision, management and government of a president and such other persons as said Trustees may appoint; the said president, with the advice of other persons so appointed, shall from time to time make all needful rules and regulations for the internal government of said University and prescribe the preliminary examinations and terms and conditions on which pupils shall be received and instructed.

Section 5. That said Trustees shall have power to make such rules, regulations, bylaws not inconsistent with the Constitution of the United States and of this State, as may be necessary for the good government of said University and management of the property and funds of the same.

Section 6. That the Trustees shall have power to fix the time of holding their annual and other meetings, to elect a president and professors for said University, to appoint an executive committee to consist of not less than seven members, which committee shall control the internal regulations of said University and fix all salaries and emoluments, and to do all other things necessary for an institution of learning not inconsistent with the laws of this State and of the United States.

Section 7. That the Faculty and Trustees shall have the power of

conferring such degrees and marks of honor as are conferred by colleges and universities generally; and that five Trustees shall be a quorum to transact business.

Section 8. That all laws and parts of laws or of the charter heretofore granted which are in conflict with this act are hereby repealed.

Section 9. That this act shall be in force from and after its ratification and acceptance by the Board of Trustees.

3. *The Bylaws of the University*

Article I. Aims

1. The aims of Duke University are to assert a faith in the eternal union of knowledge and religion set forth in the teachings and character of Jesus Christ, the Son of God; to advance learning in all lines of truth; to defend scholarship against all false notions and ideals; to develop a Christian love of freedom and truth; to promote a sincere spirit of tolerance; to discourage all partisan and sectarian strife; and to render the largest permanent service to the individual, the state, the nation, and the church. Unto these ends shall the affairs of this University always be administered.

Article II. Board of Trustees

1. ***Powers.*** All powers of the University shall be vested in a Board of Trustees consisting of thirty-six members.

2. ***Nomination and Elections.*** The Trustees shall be elected as follows, twelve by the North Carolina Conference of the Methodist Church; twelve by the Western North Carolina Conference of the Methodist Church; and twelve by the General Alumni Association of Duke University.

The Executive Committee, acting as a committee on nominations, shall report to the Board the names of the persons whom it nominates for election as Trustees. The Board, by majority vote of the Trustees present at a regular meeting, shall recommend the persons to be elected Trustees and submit its recommendations to the appropriate Conference of the Methodist Church and the General Alumni Association.

No person who shall have attained the age of seventy years shall be elected a Trustee.

3. ***Term.*** The term of office of a Trustee shall be six years, beginning on the first day of January following the election, and the terms shall be so arranged that four Trustees shall be elected by each Conference and four by the General Alumni Association every two years.

4. ***Vacancies.*** Any vacancy in the membership of the Board of Trustees

shall be filled for the unexpired term by a majority vote of the Trustees present at a regular meeting of the Board.

5. ***Retirement.*** A Trustee who attains or has attained the age of seventy years shall retire at the end of the term for which he has been elected.

6. ***Emeritus.*** The Board of Trustees may elect a retiring or resigning Trustee a Trustee Emeritus. Trustees Emeriti shall be entitled to receive notice of all meetings of the Board and attend and participate in such meetings, but shall not have the right to vote.

7. ***Removal.*** Any Trustee who may refuse or neglect to discharge the duties of Trustee may be removed by the affirmative vote of three-fourths of the members of the entire Board of Trustees.

Article III. Meetings of the Board

1. ***Annual Meeting.*** The annual meeting of the Board of Trustees shall be held on the Saturday before the first Monday in June.

2. ***Regular Meetings.*** Regular meetings of the Board of Trustees shall be held on the Saturday preceding the day on which Founders' Day is celebrated and on the first Friday in March.

3. ***Special Meetings.*** Special meetings shall be held upon the call of the Chairman, or upon written request of twelve or more Trustees addressed to the Secretary, with a copy to the Chairman specifying the business to be transacted at the meeting.

4. ***Notice.*** The Secretary shall give at least five days' notice to each member of the Board stating the time and place of all meetings, and the purpose of any special meeting.

5. ***Place.*** All meetings of the Board of Trustees shall be held at Duke University in the City of Durham, North Carolina, except that the Trustees by vote, or written assent, of a majority of the then members of the Board may designate another place for any meeting.

6. ***Quorum.*** A majority of the then members of the Board of Trustees shall be a quorum for the transaction of business.

Article IV. Officers of the Board

1. ***Officers of the Board.*** The officers of the Board of Trustees shall be a Chairman, a Vice Chairman, and a Secretary.

2. ***Election.*** The officers of the Board of Trustees shall be elected at its annual meeting for a term of one year or until their successors are elected and qualified.

3. ***Duties.***

   a. The Chairman shall preside at all meetings of the Board, shall represent the Trustees at public meetings of the University, and shall be a member of and Chairman of the Executive Committee.

   b. The Vice Chairman shall perform the duties of the Chairman in

the absence or disability of the Chairman, or in the event of a vacancy in that office.

c. The Secretary of the University shall also be the Secretary of the Board of Trustees. He shall record the minutes of all meetings of the Board and its Executive Committee, and shall have custody of the Charter, Bylaws, minutes, records and other documents of the Board and its Committees. The Secretary shall send a copy of the minutes to each member of the Board promptly after each meeting of the Board and of the Executive Committee.

4. *Vacancies.* A vacancy in any office of the Board of Trustees may be filled for the unexpired term by the Board of Trustees.

Article V. Committees of the Board

1. *Committees.* The Standing Committees of the Board shall be:

1. Executive Committee
2. Building and Grounds Committee
3. Committee for Institutional Advancement
4. University Committee.

The Board of Trustees may authorize other committees from time to time.

The Committees of the Board of Trustees shall have the powers and duties set forth in these Bylaws and such other powers and duties as the Board may delegate to them. They shall exercise their powers and perform their duties subject to the direction and approval of the Board. They may from time to time make recommendations to the Board for the establishment of new policies or any changes in existing policies.

2. *Membership.* At each annual meeting the Board of Trustees shall elect the members of the four Standing Committees to serve for the ensuing year. The Chairman of the Board of Trustees and the President of the University shall be members of the Executive Committee and shall be ex officio, non-voting members of all other Committees of the Board of Trustees.

Insofar as practical membership on the Standing Committees should be rotated.

3. *Vacancies.* Any vacancy in the membership of a Standing Committee shall be filled by the Chairman of the Board of Trustees.

4. *Meetings.* Each Standing Committee shall meet at such times and places and upon such notice as it may determine, and shall file a copy of the minutes of each meeting with the Secretary of the University.

5. *Quorum.* A majority of the then members of a Standing Committee shall be a quorum for the transaction of business.

Article VI. Executive Committee

1. ***Membership.*** The Chairman of the Board, the President of the University, and not less than five Trustees shall constitute the Executive Committee of this Board.

2. ***Powers and Duties.*** The Executive Committee shall:

a. Control the internal regulations of the University.
b. Fix all salaries, emoluments, and other allowances.
c. Approve annual budget and authorize the annual audit.
d. Appoint an Investment Committee of not less than five members, at least two of whom shall be Trustees, with such powers and duties as may be assigned to it by the Executive Committee.
e. Subject to the provisions of the Charter and these Bylaws, exercise all powers of the Board of Trustees in the interims between meetings of the Board.
f. Report its actions to the Board of Trustees.
g. Act as the Nominating Committee for the election of Trustees.
h. Appoint a Budget and Audit Committee, composed of not less than three (3) members, at least two (2) of whom shall be Trustees, and the Vice President for Business and Finance, ex officio, with such powers and duties as may be assigned to it by the Executive Committee.

Article VII. Building and Grounds Committee

1. ***Membership.*** The Building and Grounds Committee shall be composed of not less than five Trustees and the Vice President for Business and Finance ex officio.

2. ***Powers and Duties.*** The Building and Grounds Committee shall consider proposals by the President for:

a. Plans for the development and use of the University's buildings, grounds, and utilities devoted to educational purposes.
b. The kind, location and plans for all buildings, utilities and improvements, including roads and parking areas.
c. Architects and contractors.

The Committee shall have authority to accept all new construction on behalf of the University but shall not incur any expenses not previously authorized by the Board of Trustees or the Executive Committee.

The Committee shall report its findings and recommendations to the Board of Trustees or the Executive Committee.

Article VIII. Committee for Institutional Advancement

1. ***Membership.*** The Committee for Institutional Advancement shall

be composed of not less than five Trustees and the Vice President for Institutional Advancement ex officio.

2. ***Powers and Duties.*** The Committee for Institutional Advancement shall consider proposals by the President for policies and plans concerning the financial development, fund raising, public relations, and alumni affairs of the University.

The Committee shall report its findings and recommendations to the Board of Trustees or the Executive Committee.

Article IX. University Committee

1. ***Membership.*** The University Committee shall be composed of not less than twelve Trustees and the Provost ex officio.

2. ***Powers and Duties.*** The University Committee shall:

a. Serve as a Board of Visitors to the University.
b. Serve as a Committee on Earned Degrees.
c. Consider proposals by the President for the educational role of each school, college, and unit of the University and for the University as a whole, the admission of students at all levels, student life and activities, educational and research programs, and the coordination of all educational activities.
d. Designate five trustees who, along with an equal number of faculty members designated by the President, and the President ex officio, shall serve as a Committee on Honorary Degrees to make recommendations to the University Faculty and the Board of Trustees.

The Committee shall report its findings and recommendations to the Board of Trustees or the Executive Committee.

Article X. Officers of the University

1. The Officers of the University shall be a President, a Provost, a Vice President for Business and Finance, a Vice President for Institutional Advancement, one or more other Vice Presidents, a Treasurer, a Secretary, a University Counsel, and such other officers as the Board of Trustees may elect. One person may hold more than one office, except that the offices of President and Secretary may not be held by the same person.

2. These Officers shall be elected by the Board of Trustees at its annual meeting for a term of one year and shall serve until their successors are elected and have taken office.

3. A vacancy in any office of the University may be filled, for the unexpired term, by the Board of Trustees or by the Executive Committee.

Article XI. President

1. The President shall be the chief educational and administrative officer of the University. He shall be responsible to the Board of Trustees for the supervision, management, and government of the University, and for interpreting and carrying out the policies of the Board of Trustees. He shall have the powers and duties set forth in the Charter and in these Bylaws, and such other powers and duties as the Board of Trustees shall delegate to him.

2. He, or someone designated by him, shall preside at all academic functions and represent the University before the public.

3. He shall preside at all meetings of the University Faculty. He may veto any action taken by the University Faculty or any action taken by the faculty of any college or school in the University and state his reasons for such action.

4. He shall submit a proposed annual budget for the University to the Executive Committee prior to the beginning of the fiscal year covered by the budget.

5. He shall submit to the Board of Trustees an annual report on the condition, operations and needs of the University.

6. He shall recommend to the Board of Trustees persons to be officers of the University other than the President.

Article XII. Provost

1. The Provost shall be an executive officer of the University, under the President, responsible for all educational affairs and activities, including research and the University Hospital, and for all aspects of student activity and welfare. He shall have the powers and duties assigned to him by the President and shall report to the President.

2. He shall be a member of the faculty of each college and school, and ex officio a member of each committee (other than Committees of the Board of Trustees) or other body concerned with matters for which he is responsible.

3. He shall receive recommendations developed by the faculty and educational officers for consideration and recommendation to the President.

4. He shall assume the powers and duties of the President during the incapacity or absence of the President or in case of a vacancy in that office.

Article XIII. Vice President for Business and Finance

1. The Vice President for Business and Finance shall be an executive officer, under the President, responsible for all business and finance, in-

cluding accounting and auditing, preparation of budgets, fiscal planning, and operating of services of the University. He shall have the power and duties assigned to him by the President and shall report to the President.

2. He shall have custody of all records, contracts, agreements, deeds, and other documents of the University or relating to its operations or properties, except minutes of meetings.

3. He shall submit to each regular meeting of the Executive Committee a report on those aspects of the finances of the University that the Executive Committee may require, and shall submit to the Board of Trustees at the end of each fiscal year an account of all receipts and disbursements for the preceding year and a statement in such detail as the Board of Trustees may require of the financial condition of the University at the end of such year.

4. He and the personnel under him shall be bonded to the extent determined by the Executive Committee.

Article XIV. Vice President for Institutional Advancement

The Vice President for Institutional Advancement shall be an executive officer, under the President, responsible for all public and alumni relations, fund raising, and long range planning and development. He shall have the powers and duties assigned to him by the President and shall report to the President.

Article XV. Treasurer

1. The Treasurer shall report to the President or such officer of the University as the President may direct and shall have the powers and duties assigned to him by the President or such other officer.

2. He may receive and disburse investment funds and purchase, sell, or otherwise dispose of investment securities pursuant to the directions of the Executive Committee or Investment Committee, as the case may be.

3. He and the personnel under him shall be bonded to the extent determined by the Executive Committee.

Article XVI. Secretary

1. The Secretary, under the President, shall have all of the powers and duties set forth in these Bylaws and the powers and duties commonly incident to his office. He also shall have the powers and duties assigned to him by the President and shall report to the President.

2. He shall be the custodian of the seal of the corporation and shall affix and attest to same on all duly authorized contracts, deeds, and other documents.

3. He shall maintain an official roster setting forth the status of all persons employed by the University.

Article XVII. University Counsel

The University Counsel shall be the legal advisor to the University and shall be responsible for all matters of a legal nature concerning the University, including litigation, preparation or approval of all contracts, deeds, conveyances, or other documents.

Article XVIII. Faculty

1. The University Faculty shall be composed of the President, the Provost, the Vice Presidents, the Secretary (who shall also be the Secretary of the Faculty), all deans, professors, associate professors, and assistant professors, Registrar, and the University Librarian, and such other persons as may be designated by the President and approved by the Executive Committee or the Board of Trustees.

2. The University Faculty shall be responsible for the conduct of instruction and research in the various colleges and schools in the University. It may also consider and make recommendations to the President regarding any and all phases of education at the University.

3. The University Faculty shall approve and recommend to the Board of Trustees the persons it deems fit to receive degrees or other marks of distinction, and the establishment of any new degree or diploma.

4. The University Faculty may organize and exercise its functions through appropriate councils, committees, or other bodies.

5. Each college and school in the University may have a faculty of its own, which shall be composed of the President, the Provost, the Secretary, and all members of the University Faculty in the particular college or school. Each such faculty shall function under the President and other officers of educational administration and subject to the regulations of the University Faculty.

Article XIX. Appointments, Promotions and Tenure

1. Members of the University Faculty shall be elected, appointed, or promoted by the Board of Trustees or the Executive Committee upon the recommendation of the Provost, with the approval of the President.

2. Members of the University Faculty, above the rank of instructors, shall have tenure after seven years of continuous service at the University, or such shorter period as may be determined for individual cases, by the Board of Trustees or the Executive Committee; provided that any such person shall be subject to dismissal by the Board of Trustees or the Executive Committee for misconduct or neglect of duty.

Article XX. Sabbatical Leaves

1. Each member of the University Faculty of the rank of professor, associate professor, or assistant professor shall be eligible for sabbatical leave after each six years of service to the University. Such leave may be taken for a full year at half salary or a half year at full salary.

2. Sabbatical leave may be granted by the Executive Committee upon the written recommendation of the dean of the appropriate college or school, approved by the Provost and the President.

Article XXI. Retirement

1. All members of the faculty of the University who are eligible for or participate in the TIAA Plan and who would attain the age of seventy years prior to March 1 of a given academic year shall retire at the end of the preceding academic year and all such members of the faculty who attain the age of seventy years on or after March 1 in a given academic year shall retire at the end of such academic year.

2. The retirement and annuity plan adopted by the University on October 1, 1925, is hereby amended in those respects required to conform with the provisions of the Bylaws.

Article XXII. Fiscal Year, Academic Year and Academic Calendar

1. The fiscal year of the University shall commence on July 1 and end on the following June 30.

2. The academic year of the University shall commence on September 1 and end on the following August 31.

3. The President shall establish the academic calendar for each academic year, except that graduation exercises shall take place on the first Monday in June of each year.

Article XXIII. Amendment of Bylaws

These Bylaws may be amended at any regular meeting of the Board of Trustees by the affirmative vote of two-thirds of the then membership of the Board, provided that the proposed amendment is mailed by the secretary of the Board to each member at least twenty days before the meeting.

Alumni Organizations

All former students of Duke University are enrolled as members of the General Alumni Association. This organization meets annually, at Commencement, to transact appropriate business and to hear a report on the state of the University from the President of the University or his representative. At this time, too, the Association elects its officers, alumni representatives to the University's Board of Trustees, and alumni representatives to the Athletic Council.

In addition to the General Alumni Association, there are individal associations for seven of the University's nine schools and colleges. These include, at the undergraduate level, The Woman's College, the School of Nursing, and the School of Engineering, and at the graduate and professional level, the Schools of Medicine, Forestry, Law, and Divinity. Each of these associations meets at least once each year to transact pertinent business and to elect officers.

Each class that has been graduated from the University also exists as a permanent organization, and its members will customarily reunite at intervals of five years. In approximately 100 locations, where Duke alumni live in concentrated numbers, there are local alumni associations with purposes compatible to those of the General Alumni Association.

The executive body of the larger organization of alumni is the Duke University National Council, which also has representation from each of the University's faculties, from its administration and trustees, and from groups of special friends. The National Council meets twice each year, on Founders' Day and at Commencement, to establish and review the programs and policies that govern the activities of all alumni organizations and their relationships with the University.

The Department of Alumni Affairs is maintained by the University to implement, coordinate, and administratively assist in the execution of programs of alumni and alumni related activity. The Department also maintains alumni records and mailing lists and issues periodic publications designed to keep alumni and friends informed about organizational and University developments.

The Loyalty Fund program of annual giving and the Bequest Program, conducted under the auspices of the National Council, are also administered by the Department of Alumni Affairs.

The purposes of all Duke University alumni organizations can best be indicated by quoting Article II of the constitution of the General Alumni Association: "The objects of this association shall be to promote the welfare and progress of Duke University, to maintain and cultivate good fellowship among its members, and to exercise the functions created for alumni . . . in the Charter of the University."

Gifts and Bequests

Duke University is a privately established institution which derives its principal support from endowment funds and from gifts and grants, thus enabling it to offer both academic and professional training to its students at a fraction of the actual cost. Gifts and grants for both operational and capital development purposes presently account for approximately one-half of the University's annual income. They are essential to the quality of its educational services and to its progress as a center of learning and research.

Gifts to Duke University, of course, fully qualify as tax deductible contributions.

The University welcomes gifts, immediate or deferred, when made without restriction as to use or when designated for any of a broad variety of purposes. Gifts may be of cash, securities, or any kind of real or personal property, depending upon the wishes and the conveniences of the donor, and University officers are prepared to confer at any time to make sure that both the donor's wishes and possible tax advantages are fully realized.

A number of publications, designed to assist the donor in making a gift, are available, and requests for these or other information will be promptly acknowledged. Such requests should be addressed to the Office of the Vice President for Business and Finance, 211 Allen Building, Duke University, Duke Station, Durham, N.C.

Deferred gifts may be made through bequests or through insurance, as well as through a variety of trust arrangements. Such gifts may become significant factors in estate planning, and while qualified counseling is essential in most instances, some sample bequest forms may be noted:

General

I give (devise; if real property) and bequeath to Duke University, a corporation existing under the laws of the State of North Carolina

and located in the City and County of Durham, State of North Carolina, and its successors forever, the sum of ..... dollars (or otherwise describe the gift) for the general purposes and uses of the University at the discretion of the Board of Trustees.

Specific

I give (devise; if real property) and bequeath to Duke University, a corporation existing under the laws of the State of North Carolina and located in the City and County of Durham, State of North Carolina, or its successors forever, the sum of ..... dollars (or otherwise describe the gift) and direct that the income therefrom shall be used for the following purposes, viz. (here describe the use desired).

Codicil

Having hereinbefore made my last Will and Testament dated ....., and being of sound mind, I hereby make, publish, and declare the following codicil thereto; (here insert clause in same form as if it had been included in body of Will). Except as hereinbefore changed, I hereby ratify, confirm, and republish my said last Will and Testament.

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The Office of Information Services is the official news agency of the University, and all University news, except sports, emanates from this office. The Office maintains the University's relationship with the press, radio and television, and other communications media, and interprets the University—its faculty, its research, and its academic achievements—to the public via these media.

The Office also maintains individual biographical files on all faculty members, students, and staff, as well as files on all University departments and activities. Its files of clippings form a rich source of historical information of the Institution's life. In addition, the Office is a source of information for the many inquiries about Duke University which are received daily from all sections of the nation and from abroad.

Directory of the Officers, Faculty, and Staff

Table of Contents

The Corporation 1
General Administration 4
Emeriti 4
Instructional Staff 8
Part Time Instructors 47
Research Associates 49
Clinical Faculty—Medical School 53
Educational Administration 55
Business Administration 58
Institutional Advancement 59
Regional Programs 61
Student Affairs 61
Other Officers 62
Duke University Press 62
Music 63
Art 63
Athletics 63
House Counselors, Woman's College 65
Food Services 65
The University Stores 66
The University Libraries 66

Officers, Faculty, and Staff

The Corporation

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W. Kenneth Goodson (1966)	Birmingham, Ala.
Pleasant Huber Hanes, Jr. (1954)	Winston-Salem, N. C.
Amos Ragan Kearns (1945)	High Point, N. C.

* Deceased 7-29-67
† Deceased 5-3-68

Henry Edward Rauch (1964)	Greensboro, N. C.
Mary D. B. T. Semans (1961)	Durham, N. C.
Wright Tisdale (1957), *Chairman*	Dearborn, Mich.
James Frederick Von Canon (1959)	Sanford, N. C.

From the Alumni

*Charles Phillips Bowles (1954)	Winston-Salem, N. C.
Norman Edward Edgerton (1941)	Raleigh, N. C.
W. Kenneth Goodson (1966)	Birmingham, Ala.
Pleasant Huber Hanes, Jr. (1954)	Winston-Salem, N. C.
Amos Ragan Kearns (1945)	High Point, N. C.

Trustees whose terms expire December 31, 1971

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Benjamin Everett Jordan (1943)	Saxapahaw, N. C.
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Marshall I. Pickens (1963)	Charlotte, N. C.
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* Deceased 8-3-66
† Deceased 1-7-67

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General Administration

Douglas Maitland Knight, Ph.D., Litt.D., LL.D., L.H.D. *President*	University House 1508 Pinecrest Road
R. Taylor Cole, Ph.D. *Provost*	7 Sylvan Road
Frank Leon Ashmore, A.B. *Vice President for Institutional Advancement*	2637 McDowell Street
Gerhard Chester Henricksen, M.A., C.P.A. *Vice President and Treasurer*	3629 Westover Road
Everett Harold Hopkins, M.A., LL.D. *Vice President for Regional Programs* *Assistant Provost*	2016 Campus Drive
Charles B. Huestis *Vice President for Business and Finance*	47 A & B Colonial Apts. Chapel Hill Road
Barnes Woodhall, M.D. *Associate Provost*	4006 Dover Road
Frank Traver de Vyver, Ph.D. *Vice Provost*	8 Sylvan Road
Harold W. Lewis, Ph.D. *Vice Provost and Dean of Arts and Sciences*	1708 Woodburn Road
Richard Lionel Predmore, D.M.L. *Vice Provost and Dean of the Graduate School of Arts and Sciences*	2535 Sevier Street
Craufurd David Goodwin, Ph.D. *Assistant Provost*	2256 Cranford Road
Robert L. Dickens, M.S., C.P.A., LL.D. *Acting Assistant Provost*	2717 Circle Drive
William J. Griffith, A.B. *Assistant to the Provost in the Area of Student Affairs*	2518 Wrightwood Avenue
Benjamin Edward Powell, Ph.D. *Librarian*	3609 Hathaway Road
Richard Lovejoy Tuthill, Ed.D. *University Registrar*	2709 Dogwood Road
Rufus H. Powell, LL.B. *Secretary of the University*	719 Cornwallis Road
Stephen Cannada Harward, A.B., C.P.A. *Assistant Secretary and Controller*	2502 Sevier Street
Edwin Constant Bryson, LL.B. *University Counsel*	818 Anderson Street

Emeriti

Edwin Pascal Alyea, M.D. *Professor Emeritus of Urology*	3102 Devon Road
William Banks Anderson, M.D. *Professor Emeritus of Ophthalmology*	502 East Forest Hills Boulevard
Thomas Malcolm Aycock, M.A. *Professor Emeritus of Physical Education*	D-2-D University Apartments
Katharine May Banham, Ph.D. *Associate Professor Emeritus of Psychology*	300 Swift Avenue
*Edward Willard Berry, Ph.D. *Professor Emeritus of Geology*	Corpus Christi, Texas

* Deceased 5-10-68

Lucius Aurelius Bigelow, Ph.D.
Professor Emeritus of Chemistry — 131 Pinecrest Road

Harold Crusius Bird, Ph.B., C.E.
Professor Emeritus of Civil Engineering — 2621 Hampton Avenue, Charlotte, N. C.

William Bryan Bolich, B.C.L.
Professor Emeritus of Law — 806 Lakeshore Apartments, 2306 S.W., 13th Street, Gainesville, Fla.

John Saeger Bradway, A.M., LL.B.
Professor Emeritus of Law — 2803 Carleton, San Diego, Calif.

†Roberta Florence Brinkley, Ph.D.
Professor Emeritus of English and Dean Emeritus of the Woman's College — No. 4, 4th Street, N.E., Apartment D, Washington 3, D. C.

Alfred Smith Brower, A.B.
Business Manager and Treasurer Emeritus — 2543 Sevier Street

Je Harned Bufkin, R.N., R.R.L.
Associate Professor Emeritus of Medical Record Library Science — Village of Picardy, Crystal River, Fla.

Juan R. Castellano, Ph.D.
Professor Emeritus of Romance Languages — University of Miami, Coral Gables, Fla.

Benjamin Guy Childs, M.A.
Professor Emeritus of Education — 1019 West Markham Avenue

Kenneth Willis Clark, B.D., Ph.D.
Professor Emeritus of New Testament — 1308 West Markham Avenue

Frederick Augustus Grant Cowper, Ph.D.
Professor Emeritus of Romance Languages — 1017 Dacian Avenue

Mason Crum, Ph.D., Litt.D.
Professor Emeritus of Biblical Literature — Lake Junaluska, N. C.

Wilburt Cornell Davison, M.D., D.Sc., LL.D.
James B. Duke Professor Emeritus of Pediatrics and Dean Emeritus of the School of Medicine — Box 34, Roaring Gap, N. C.

Charles Aubrey Dukes, A.B.
Assistant Vice President Emeritus — 1309 Oakland Avenue

George Sharp Eadie, M.B., Ph.D.
Professor Emeritus of Physiology and Pharmacology — 3433 Dover Road

Watt Weems Eagle, M.D.
Professor Emeritus of Otolaryngology — 703 Professional Drive, New Bern, N. C.

Howard Easley, Ph.D.
Associate Professor Emeritus of Education — 10 Lebanon Circle

Frank Nicholas Egerton, A.M., E.E.
Associate Professor Emeritus of Electrical Engineering — Brevard College, Brevard, N. C.

Wiley Davis Forbus, M.D.
Professor Emeritus of Pathology — 3309 Devon Road

Allan H. Gilbert, Ph.D.
Professor Emeritus of English — Apartment PH-J, 69 West 9th Street, New York, N. Y.

Ellen Huckabee Gobbel, A.M.
Dean Emeritus of Undergraduate Instruction — 2410 Par Place

Paul Magnus Gross, Ph.D.
William Howell Pegram Professor Emeritus of Chemistry — 3816 Dover Road

Irving Emery Gray, Ph.D.
Professor Emeritus of Zoology — 124 Pinecrest Road

Julia Rebecca Grout, M.S.
Professor Emeritus of Physical Education — 2320 Prince Street

† Deceased 6-9-67

Howard N. Haines, B.S. *Associate Professor Emeritus of Civil Engineering*	3530 Randolph Street
William Holland Hall, A.M., M.S.C.E. *Dean Emeritus of the College of Engineering and* *J. A. Jones Professor Emeritus of Engineering*	Johnson Apartment 304 Watts Street
George T. Hargitt, Ph.D., Sc.D. *Professor Emeritus of Zoology*	811 Watts Street
J. Deryl Hart, M.D. *President Emeritus and* *Professor Emeritus of Surgery*	2324 Duke University Road
Charles Cleveland Hatley, Ph.D. *Professor Emeritus of Physics*	Mt. Pleasant, N. C.
Caroline Elizabeth Helmick, M.D. *Associate Emeritus of Preventive Medicine*	920 Rae Drive, Apartment 5 Minneapolis, Minn. 55432
Duncan Charteris Hetherington, Ph.D., M.D. *Professor Emeritus of Anatomy*	K-3B University Apartments
Arthur Owen Hickson, Ph.D. *Professor Emeritus of Mathematics*	Box 2727, West Durham Station
Leslie Benjamin Hohman, M.D. *Professor Emeritus of Psychiatry*	1520 Hermitage Court
Calvin Bryce Hoover, Ph.D., Litt.D. *James B. Duke Professor Emeritus of Economics*	1702 Duke University Road
Jay Broadus Hubbell, Ph.D., Litt.D. *Professor Emeritus of English*	121 Pinecrest Road
William Henry Irving, Ph.D. *Professor Emeritus of English*	510 Watts Street
Howard Eikenberry Jensen, Ph.D. *Professor Emeritus of Sociology*	Lenoir Homes Cottage #6 Columbia, Mo.
Archibald Currie Jordan, M.A. *Assistant Professor Emeritus of English*	147 Pinecrest Road
Brady Rimbey Jordan, Ph.D. *Professor Emeritus of Romance Languages*	117 Pinecrest Road
Charles E. Jordan, LL.B. *Vice President Emeritus*	2507 Wrightwood Avenue
†Clarence Ferdinand Korstian, Ph.D. *Professor Emeritus of Silviculture and* *Dean Emeritus of the School of Forestry*	4 Sylvan Road
Charles Earl Landon, Ph.D. *Professor Emeritus of Economics*	Box 291 Buies Creek, N. C.
William Thomas Laprade, Ph.D. *Professor Emeritus of History*	1108 Monmouth Avenue
Alan Krebs Manchester, Ph.D. *Professor Emeritus of History*	406 Swift Avenue
*Malcolm McDermott, LL.B. *Professor Emeritus of Law*	1404 N. Main Street McAllen, Texas
Hiram Earl Myers, S.T.M., D.D. *Professor Emeritus of Biblical Literature*	141 Pinecrest Road
Ernest W. Nelson, Ph.D. *Professor Emeritus of History*	939 Lambeth Circle
Walter McKinley Nielsen, Ph.D. *James B. Duke Professor Emeritus of Physics*	139 Pinecrest Road
Karl Bachman Patterson, A.M. *Assistant Professor Emeritus of Mathematics*	1024 Monmouth Avenue

* Deceased 7-23-67
† Deceased 2-20-68

Robert Leet Patterson, Ph.D. *Professor Emeritus of Philosophy*	40 Glenwood Drive Bellehaven, Greenwich, Conn.
Mary Poteat, Ph.D. *Assistant Professor Emeritus of English*	Box 6305, College Station
Wally Reichenberg-Hackett, Ph.D. *Professor Emeritus of Psychology*	College Station
Joseph B. Rhine, Ph.D. *Director Emeritus of Parapsychology Laboratory*	Route 3 Hillsborough, N. C.
Mabel F. Rudisill, Ph.D. *Associate Professor Emeritus of Education*	2121 Woodrow Street
†Francis Xavier Schumacher, B.S. *Professor Emeritus of Forestry*	Pope Road, Route 3
Walter James Seeley, M.S. *Dean Emeritus of the College of Engineering and James B. Duke Professor Emeritus of Electrical Engineering*	1005 Urban Avenue
John Herman Shields, A.M. *Associate Professor Emeritus of Accounting*	1315 Vickers Avenue
Hilrie Shelton Smith *James B. Duke Professor Emeritus of American Religious Thought*	2721 Dogwood Road
Mrs. Bessie Whitted Spence, B.D. *Assistant Professor Emeritus of Biblical Literature*	Methodist Retirement Home
Hersey Everett Spence, B.D., D.D., Litt.D. *Professor Emeritus of Religious Education*	Methodist Retirement Home
*Hertha D. E. Sponer, Ph.D. *Professor Emeritus of Physics*	c/o Christoph Schönbach, Händelstrasse 23 31 Celle, Germany
‡Dale Fisher Stansbury, J.S.D. *Professor Emeritus of Law*	1008 West Trinity Avenue
Frederick William Stocker, M.D. *Professor Emeritus of Ophthalmology*	1124 West Forest Hills Boulevard
Clement Vollmer, Ph.D. *Professor Emeritus of German*	1617 Pinecrest Road
Warren Chase Vosburgh, Ph.D. *Professor Emeritus of Chemistry*	Route 1, Bahama, N. C.
Albert E. Wackerman, M.F. *Professor Emeritus of Forest Utilization*	3610 Dover Road
Arley John Walton, B.S.L., D.D. *Professor Emeritus of Church Administration*	3650 Mayflower Place Nashville 4, Tenn.
Loring Baker Walton, Ph.D. *Professor Emeritus of Romance Languages*	2235 Cranford Road
Charles Eugene Ward, Ph.D. *Professor Emeritus of English*	2429 Perkins Road
Mrs. Marie Anne Updike White, A.M. *Associate Professor Emeritus of English*	107 Pinecrest Road
Mrs. Eugenia Remlin Whitridge, Ph.D. *Assistant Professor Emeritus of Sociology*	1511 West Pettigrew Street
**Alban Gregory Widgery, M.A. *Professor Emeritus of Philosophy*	Val Vista, Middle Road Winchester, Va.
Ralph Sydney Wilbur, B.S. in M.E., M.E. *Professor Emeritus of Mechanical Engineering*	1018 Demerius Street

† Deceased 6-3-67
* Deceased 10-18-67
‡ Deceased 2-17-68
** Deceased 3-28-68

James Wesley Williams, M.S.
Professor Emeritus of Civil Engineering — 405 Carolina Circle

Frederick Eliphaz Wilson, A.M.
Associate Professor Emeritus of German — 1115 Iredell Street

Frederick Adolphus Wolf, Ph.D.
James B. Duke Professor Emeritus of Botany — 924 Urban Avenue

Instructional Staff

(The date in parentheses indicates the year of appointment.)

Frances Dorothy Acomb (1945), Ph.D. (Chicago)
Associate Professor of History — 1000 North Duke Street Apartment 2

Donald Keith Adams (1931), Ph.D. (Yale)
Professor of Psychology — 1214 West Cornwallis Road

P. Wesley Aitkin (1964), Th.M. (Duke)
Assistant Professor of Pastoral Care — 2909 Harriman Drive

John Richard Alden (1955), Ph.D. (Michigan)
James B. Duke Professor of History — 2736 Dogwood Road

Irving E. Alexander (1963), Ph.D. (Princeton)
Professor of Psychology and Professor of Medical Psychology in Department of Psychiatry — 1111 Watts Street

Arthur Tilo Alt (1961-65; 1967), Ph.D. (Texas)
Assistant Professor of German — 66 A Colonial Apts

John Cooley Altrocchi (1957), Ph.D. (California)
Associate Professor of Psychology and Associate Professor of Medical Psychology in Department of Psychiatry — 1110 Woodburn Road

Marcelino Amaya (1966), M.D. (Nacional Automona de Mexico)
Associate in Psychiatry — 501 Central Avenue, Butner, N. C.

Dennis Bernard Amos (1962), M.B. (Guy's Hospital Medical School, London)
Professor of Immunology and
Professor of Experimental Surgery — Route 3 Hillsborough, N. C.

Nicholas Anastasiow (1966), Ph.D. (Stanford)
Associate Professor of Education — 2948 Friendship Road

Carl L. Anderson (1955), Ph.D. (Pennsylvania)
Associate Professor of English — Route 2, Box 366

Edward E. Anderson (1966), M.D. (Duke)
Assistant Professor of Urology — 1 Winthrop Court

Lewis Edward Anderson (1936), Ph.D. (Pennsylvania)
Professor of Botany — 2020 Sunset Avenue

Nels Anderson (1966), Ph.D. (Purdue)
Associate in Physiology and Pharmacology and
Associate in Obstetrics and Gynecology — Route 1 Hillsborough, N. C.

Roger F. Anderson (1950), Ph.D. (Minnesota)
Professor of Forest Entomology — 2528 Perkins Road

William B. Anderson (1965), M.D. (Minnesota)
Assistant Professor of Psychiatry — 3117 Oxford Drive

William Banks Anderson, Jr. (1962), M.D. (Harvard)
Associate Professor of Ophthalmology — 3437 Sheridan Drive

Thomas E. Andreoli (1965), M.D. (Georgetown)
Assistant Professor of Medicine and
Assistant Professor of Physiology — 3021 Alabama Avenue Extension

William G. Anlyan (1952), M.D. (Yale)
Professor of Surgery — 1516 Pinecrest Road

Stanley H. Appel (1964-65; 1967), M.D. (Columbia)
Associate Professor of Neurology — 3718 Randolph Road

Mahadeo L. Apte (1965), Ph.D. (Wisconsin)
Assistant Professor of Linguistics in Department of Slavic Languages and Literatures and Assistant Professor of Anthropology — 1017 Norwood Avenue

Jay Morris Arena (1933), M.D. (Duke)
Professor of Pediatrics — 1403 Woodburn Road

Kiro Pete Arges (1953), M.S. in C.E. (Tennessee)
Assistant Professor of Civil Engineering — 802 West Maynard Avenue

Clay M. Armstrong (1966), M.D. (Washington)
Assistant Professor of Physiology and Assistant Professor of Neurology — Friendship Drive

Erika Rosi Eva Arndt (1964), B.A. (Berlin)
Temporary Instructor in German — 2700 Sarah Street

Alois Arnoldner (1966), Ph.D. (Vienna)
Visiting Lecturer in German — 206 Edward Street

John Leslie Artley (1955), D.Eng. (Johns Hopkins)
Professor of Electrical Engineering — 2417 Wrightwood Avenue

Arnfinn Aulie (1967), Cand. Real. (Oslo)
Temporary Instructor in Zoology — 200 Atlas Street

Hans W. Baade (1960), LL.M. (Duke)
Professor of Law — 2512 North Duke Street

Kurt W. Back (1959), Ph.D. (Massachusetts Institute of Technology)
Professor of Sociology and Professor of Medical Sociology in Department of Psychiatry — 2735 McDowell Street

Joseph Randle Bailey (1946), Ph.D. (Michigan)
Professor of Zoology — 2517 Sevier Street

Frank Baker (1960), Ph.D. (Hull)
Professor of English Church History — 1505 Pinecrest Road

Lenox Dial Baker (1937), M.D. (Duke)
Professor of Orthopedic Surgery — Box 3706 Duke Hospital

Marie Baldwin (1949), M.D. (South Carolina)
Assistant Professor of Psychiatry — Highland Hospital, Asheville, N. C.

Helmy H. Baligh (1967), Ph.D. (California)
Associate Professor of Business Administration — 303 Ridgecrest, Chapel Hill, N. C.

M. Margaret Ball (1963), Ph.D. (Stanford)
Professor of Political Science — 1407 W. Pettigrew Street

Robert H. Ballantyne (1962), Ed.D. (Washington State)
Associate Professor of Education — 2510 Wrightwood Avenue

Sarah Kathryn Barclay (1965), M.S.S. (Tulane)
Assistant Professor of Psychiatric Social Work — 2007 House Avenue, Apartment 21

Norman Howard Barlow (1955), Ph.D. (Duke)
Assistant Professor of Romance Languages — 3852 Somerset Drive

Robert L. Barnes (1965), Ph.D. (Duke)
Professor of Forest Biochemistry — 5303 Revere Road

William Barry, Jr. (1955), M.D. (Pennsylvania)
Associate Professor of Radiology and Assistant Professor of Medicine — 2713 McDowell Street

Frank Houston Bassett, III (1963), M.D. (Louisville)
Assistant Professor of Orthopedic Surgery and Associate in Anatomy — 3940 Dover Road

John V. Baxley (1966), M.S. (Georgia Tech)
Assistant Professor of Mathematics — 2206 Englewood Avenue

George J. Baylin (1939), M.D. (Duke)
Professor of Radiology and Associate in Anatomy — 2535 Wrightwood Avenue

Charles A. Baylis (1952), Ph.D. (Harvard)
Professor of Philosophy — 2610 Sevier Street

Thomas A. Baylis (1967), M.A. (California)
Instructor in Political Science — 1406 Duke University Road

William Waldo Beach (1946), B.D., Ph.D. (Yale)
Professor of Christian Ethics — 130 Pinecrest Road

Mrs. Dorothy Waters Beard (1938), R.N. (Vanderbilt)
Associate in Surgery — Route 3, Hillsborough, N. C.

Joseph Willis Beard (1937), M.D. (Vanderbilt)
James B. Duke Professor of Surgery in Charge of Experimental Surgery and Professor of Virology — Route 3, Hillsborough, N. C.

Roland Frederick Becker (1951), Ph.D. (Northwestern)
Associate Professor of Anatomy — 619 Hammond Street

Evelyn M. Bedard (1967), M.P.H. (Johns Hopkins)
Assistant Professor of Nursing — 3103 Buckingham Road

Nicole Begin-Heick (1965), Ph.D. (McGill) — 3022 Chapel Hill Road
Associate in Pharmacology — Apartment 15-B

Thomas O. Beidelman (1965), D.Phil. (Oxon.)
Associate Professor of Sociology and Anthropology — 1305 Washington Street

Peter Bentley (1966), Ph.D. (Western Australia)
Associate Professor of Pharmacology — 1212 Woodburn Road

Robert E. Benway (1967), M.D. (Miami)
Associate in Anesthesiology in the Department of Surgery — 2514 Tryon Road

William P. Beres (1966), Ph.D. (Massachusetts Institute of Technology)
Assistant Professor of Physics — 1200 Leon Street, Apartment G7

Frederick Bernheim (1930), Ph.D. (Cantab.)
James B. Duke Professor of Pharmacology — 115 Woodridge Drive

Mrs. Mary Lilias Christian Bernheim (1930), Ph.D. (Cantab.)
Professor of Biochemistry — 115 Woodridge Drive

Helga Wilde Bessent (1964), M.A. (Vanderbilt)
Lecturer in German — 2117 Englewood Avenue

Mrs. Helen Smith Bevington (1943), M.A. (Columbia)
Associate Professor of English — 4428 Guess Road

Lawrence Christian Biedenharn, Jr. (1961), Ph.D. (M.I.T.)
Professor of Physics — 2716 Sevier Street

William Dwight Billings (1952), Ph.D. (Duke)
James B. Duke Professor of Botany — 1628 Marion Avenue

Edward G. Bilpuch (1962), Ph.D. (North Carolina)
Associate Professor of Physics — Box 674, Chapel Hill, N. C.

Martin Lee Black, Jr. (1930), M.B.A. (Northwestern), C.P.A.
Professor of Accounting — 135 Pinecrest Road

John O. Blackburn (1962), Ph.D. (Florida), C.P.A.
Associate Professor of Economics — 208 Pineview Road

William Maxwell Blackburn (1926), Ph.D. (Yale)
Professor of English — 110 Pinecrest Road

Robert Lincoln Blake (1949)
Associate in Medical Art in the Division of Audiovisual Education — 609 Ruby Street

Jacob Joseph Blum (1962), Ph.D. (Chicago)
Professor of Physiology — 2525 Perkins Road

Edna May Blumenthal (1963), B.S. (Cincinnati)
Associate in Physical Therapy — 910 Lambeth Circle

*James Robert Bly (1949), M.S. (Illinois)
Associate Professor of Physical Education — 410 Leon Street

Morton Bogdonoff (1957), M.D. (Cornell)
Professor of Medicine — 2425 Wrightwood Avenue

John P. Boineau (1965), M.D. (Duke)
Assistant Professor of Pediatrics and Assistant Professor of Medicine — 2802 Legion Avenue

William L. Boletta (1967), Ph.D. (Vanderbilt)
Assistant Professor of German — 618 Morehead Avenue

Edward Claude Bolmeier (1948), Ph.D. (Chicago)
Professor of Education — 1535 Pinecrest Road

Robert A. Bonar (1959), Ph.D. (California)
Associate Professor of Biophysics in Department of Surgery — Route 2, Box 407-A, Chapel Hill, N. C.

Allan Hadley Bone (1944), M.M. (Eastman)
Professor of Music — 2725 Sevier Street

James Bonk (1959), Ph.D. (Ohio State)
Associate Professor of Chemistry — 2415 Club Boulevard

Cazlyn Green Bookhout (1935), Ph.D. (Duke)
Professor of Zoology — 1307 Alabama Avenue

Mrs. Elizabeth Circle Bookhout (1932-43; 1945), Ph.D. (New York)
Professor of Physical Education — 1307 Alabama Avenue

Lloyd J. Borstelmann (1953), Ph.D. (California)
Associate Professor of Psychology and Associate Professor of Medical Psychology in Department of Psychiatry — 2506 Francis Street

Jack Botwinick (1963), Ph.D. (New York)
Professor of Medical Psychology in the Department of Psychiatry and Lecturer in Psychology — 2433 Wrightwood Avenue

Nancy Bowers (1965), B.S. (Columbia)
Assistant Professor of Sociology — 1408 Duke University Road

Ruth M. Bowers (1967), M.A. (Chicago)
Assistant Professor of Nursing — 3600 Tremont Drive

Francis Ezra Bowman (1945), Ph.D. (Harvard)
Professor of English — 2114 Woodrow Street

Beverly A. Bowser (1967), M.S.N. (Maryland)
Assistant Professor of Nursing — Box 568, Hillsborough, N. C.

Saul Boyarsky (1963), M.D. (Vermont)
Professor of Urology and Assistant Professor of Physiology — 2713 Sevier Street

Benjamin Boyce (1950), Ph.D. (Harvard)
Professor of English — 1200 Dwire Place

Thomas A. Boyle (1957), M.S. (Lehigh)
Associate Professor of Mechanical Engineering — 1308 Anderson Street

Melvin O. Braaten (1965), Ph.D. (North Carolina State University)
Assistant Professor of Forest Biometry and Lecturer in Mathematics — 3111 Sherbon Drive

William Dalton Bradford (1966), M.D. (Western Reserve)
Assistant Professor of Pathology and Assistant in Pediatrics — 3724 Hope Valley Road

David Gilbert Bradley (1949), Ph.D. (Yale)
Associate Professor of Religion — 2507 Sevier Street

Charles Kilgo Bradsher (1939), Ph.D. (Harvard)
James B. Duke Professor of Chemistry — 118 Pinecrest Road

* Deceased 10-4-67

Ralph J. D. Braibanti (1953), Ph.D. (Syracuse)
Professor of Political Science — 2614 Stuart Drive

Karl R. Braithwaite (1967), Ph.D. (Wisconsin)
Assistant Professor of Political Science — 2303 Lednum St., Apt. C-E

Ralph Brauer (1966), Ph.D. (Rochester)
Professor of Physiology and Pharmacology and Chief of Laboratory of Marine Physiology — 7205 Wrightsville Avenue, Wilmington, N. C.

Patrick J. Breen (1967), M.D. (Royal College of Surgeons, Ireland)
Associate in Anesthesiology in the Department of Surgery — 2227 Cranford Road

Jack W. Brehm (1958), Ph.D. (Minnesota)
Professor of Psychology — 1212 Roosevelt Drive, Chapel Hill, N. C.

Bernard Bressler (1954), M.D. (Washington)
Professor of Psychiatry — 2700 Circle Drive

Rubin Bressler (1961), M.D. (Duke)
Professor of Medicine, and Professor of Pharmacology — 1100 Woodburn Road

Irwin A. Brody (1964), M.D. (Pennsylvania)
Assistant Professor of Neurology in the Department of Medicine — Route 1, Hillsborough, N. C.

Earl I. Brown, II (1960), Ph.D. (Texas)
J. A. Jones Professor of Civil Engineering — 1631 Marion Avenue

Frances Campbell Brown (1931), Ph.D. (Johns Hopkins)
Professor of Chemistry — 1205 Dwire Place

Ivan Willard Brown, Jr. (1940-42; 1945), M.D. (Duke)
James B. Duke Professor of Surgery — 1709 Vista Street

Myrtle Irene Brown (1967), R.N., Ph.D. (New York)
Professor of Nursing — 3103 Buckingham Road

George W. Brumley, Jr. (1967), M.D. (Duke)
Assistant Professor of Pediatrics — 3318 Devon Road

Mrs. Anne-Marie Bryan (1961), M.A.T. (Duke)
Assistant Professor of Romance Languages — 217 Faculty Apts., Box 7337

Edward H. Bryan (1960), Ph.D. (Wisconsin)
Professor of Civil Engineering — 2743 Sevier Street

Paul Robey Bryan, Jr. (1951), Ph.D. (Michigan)
Associate Professor of Music — 1108 Watts Street

Edwin Constant Bryson (1931), LL.B. (Oregon)
Professor of Law and Professor of Legal Medicine — 818 Anderson Street

Marion Bryson (1962), Ph.D. (Iowa State)
Associate Professor of Mathematics and Associate Professor of Community Health Sciences — 2900 Arnold Street

C. Edward Buckley (1963), M.D. (Duke)
Assistant Professor of Medicine and Associate in Immunology in the Department of Microbiology — 3621 Westover Road

Louis J. Budd (1952), Ph.D. (Wisconsin)
Professor of English — 2753 McDowell Street

Albert George Buehler (1955), M.A. (North Carolina)
Associate Professor of Physical Education — 4713 Stafford Drive

John Buettner-Janusch (1965), Ph.D. (Michigan)
Professor of Anatomy and Professor of Zoology — 804 Berkeley Street

Mrs. Grace Bullock (1957-59; 1967), M.S.N. (North Carolina)
Assistant Professor of Nursing — 3729 Hermine Street

Mrs. Mary Jane Mordan Burch (1961), M.Ed., M.S.N. (Yale)
Associate Professor of Nursing — Route 2, Chapel Hill, N. C.

Donald Smiley Burdick (1962), Ph.D. (Princeton)
Assistant Professor of Mathematics — 108 Emerald Circle

†Peter M. Burkholder (1965), M.D. (Cornell)
Assistant Professor of Pathology — 2815 Welcome Drive

Jacob Burlak (1965), Ph.D. (Cantab.)
Associate Professor of Mathematics — 2736 Montgomery Street

Richard O. Burns (1964), Ph.D. (Illinois)
Associate Professor of Microbiology — Route 3, Kelly Drive

Ewald W. Busse (1953), M.D. (Washington)
J. P. Gibbons Professor of Psychiatry — 1132 Woodburn Road

Ronald R. Butters (1967), Ph.D. (Iowa)
Assistant Professor of English — 15 Jefferson Drive

Gale Herbert Buzzard (1957), Ph.D. (North Carolina State)
Assistant Professor of Mechanical Engineering — 20 Parkwood Manor

William Lawrence Byrne (1954), Ph.D. (Wisconsin)
Associate Professor of Biochemistry — 2531 Sevier Street

John B. Cahoon, Jr. (1958), R.T. (Duke)
Assistant Professor of Radiologic Technology — 2418 Perkins Road

Jasper Lamar Callaway (1937), M.D. (Duke)
James B. Duke Professor of Dermatology — 828 Anderson Street

Edmund McCullough Cameron (1926), A.B. (Washington & Lee)
Director of Physical Education and Athletics — 2818 Chelsea Circle

Nancy W. Cameron (1967), M.S.N. (Emory)
Instructor in Nursing — 3812 Noremac Drive, Raleigh, N. C.

*Janet E. Campbell (1962), M.A. (Chicago) — East Lake Ann Drive
Assistant Professor of Nursing — Route 8, Raleigh, N. C.

Ramon V. Canent (1965), M.D. (Santo Tomas, Manila)
Assistant Professor of Pediatrics — 3314 Waterbury Drive

Alfred K. Canterbury (1967), B.S. (U.S.A.F. Academy)
Assistant Professor of Aerospace Studies — 5312 Newhall Road

M. Paul Capp (1962), M.D. (North Carolina)
Associate Professor of Radiology and Assistant Professor of Pediatrics — 608 Starmont Drive

Peter Carbone (1966), Ed.M. (Harvard)
Assistant Professor of Education — 111 Benrose Circle

Leonard Carlitz (1932), Ph.D. (Pennsylvania)
James B. Duke Professor of Mathematics — 2303 Cranford Road

David Williams Carpenter (1929), Ph.D. (Duke)
Professor of Physics — 137 Pinecrest Road

Dwight W. Carpenter (1966), Ph.D. (Illinois)
Assistant Professor of Physics — 1015 Green Street

Robert C. Carson (1960), Ph.D. (Northwestern)
Associate Professor of Psychology and Associate Professor of Medical Psychology in Department of Psychiatry — 3030 Glendale Avenue

Francis Bayard Carter (1931), M.D. (Johns Hopkins)
Professor of Obstetrics and Gynecology — 5 Sylvan Road

William H. Cartwright (1951), Ph.D. (Minnesota)
Professor of Education — 2114 Campus Drive

G. S. Terrence Cavanagh (1962), B.L.S. (McGill) — Apartment F-8
Professor of Medical Literature — 1200 Leon Street

Patrick J. Cavanaugh (1960), M.D. (St. Louis)
Associate Professor of Radiology — Route 2, Box 381

B. F. Caviness (1967), Ph.D. (Carnegie Institute of Technology)
Assistant Professor of Mathematics — 3600 Tremont Drive

† Leave of absence 9-15-67 through 2-15-68
* Leave of absence 9-1-66 through 8-31-68

Jane Shearin Caviness (1967), M.S. (Carnegie Institute of Technology)
Instructor in Mathematics 3600 Tremont Drive

John W. Cell (1962), Ph.D. (Duke)
Assistant Professor of History 2101 Dartmouth Drive

Jack B. Chaddock (1966), Sc.D. (Massachusetts Institute of Technology)
Professor of Mechanical Engineering 2535 Sevier Street

Leon E. Chaiken (1952), M.F. (Cornell)
Professor of Forest Management 2737 Dogwood Road

Arthur C. Chandler (1965), M.D. (Duke)
Assistant Professor of Ophthalmology 2408 Alpine Road

James T. Chen (1965), M.D. (National Defense Medical Center, Taipei, Taiwan)
Associate in Radiology 9C Channing Court Apartments

Ronald W. Chen (1962), Ph.D. (California)
Assistant Professor of Experimental Surgery 1011 Anderson Street

Walter Boris Cherny (1957), M.D. (McGill)
Associate Professor of Obstetrics and Gynecology 2 Kimberly Drive

Donald B. Chesnut (1965), Ph.D. (California Institute of Technology)
Associate Professor of Chemistry 4404 Malvern Road

Arthur Christakos (1963), M.D. (South Carolina)
Assistant Professor of Obstetrics and Gynecology 2608 Winton Road

C. Donald Christian (1964), M.D., Ph.D. (Duke)
Associate Professor of Obstetrics and Gynecology and Assistant Professor of Anatomy 1023 Sycamore Street

George C. Christie (1967), S.J.D. (Harvard)
Professor of Law 1632 University Drive

Giorgio Ciompi (1964), Master (Paris Conservatory)
Visiting Artist in Music 33 Kimberly Drive

James R. Clapp (1963), M.D. (North Carolina)
Assistant Professor of Medicine King Charles Road

Elon Henry Clark (1934)
Professor of Medical Art in the Division of Audiovisual Education 801 West Maynard Avenue

Henry B. Clark (1966), Ph.D. (Yale)
Associate Professor of Religion 3108 Camelot Court

Lelia Ross Clark (1949), M.A. (Columbia)
Professor of Nursing Service 1506 Woodland Drive

Peter Clark (1967), Ph.D. (Massachusetts Institute of Technology)
Assistant Professor of Economics 1620 Delaware

Romane Lewis Clark (1953), Ph.D. (Iowa)
Professor of Philosophy 2511 Sevier Street

Robert B. Claytor (1964), Th.M. (Duke)
Instructor in Pastoral Care 1646 Marion Avenue

James T. Cleland (1945), Th.D. (Union)
James B. Duke Professor of Preaching 2117 Campus Drive

Edward Clifford (1965), Ph.D. (Minnesota)
Assistant Professor of Medical Psychology in Department of Psychiatry and Lecturer in Psychology 920 Monmouth Avenue

Frank W. Clippinger (1957), M.D. (Washington)
Associate Professor of Orthopedic Surgery 1302 Oakland Avenue

John L. E. Clubbe (1966), Ph.D. (Columbia)
Assistant Professor of English 209 Watts Street

John M. Clum (1966), Ph.D. (Princeton)
Assistant Professor of English Apartment N-3B 1500 Duke University Road

Harry M. Cocowitch (1967), B.S. (Alabama)
Professor of Naval Science R.F.D. 2, Box 66

Sanford I. Cohen (1957), M.D. (Chicago)
Professor of Psychiatry — 1334 Welcome Circle

Robert Taylor Cole (1935), Ph.D. (Harvard)
James B. Duke Professor of Political Science — 7 Sylvan Road

Joel G. Colton (1947), Ph.D. (Columbia)
Professor of History — 2801 Dogwood Road

Robert Merle Colver (1953), Ed.D. (Kansas)
Associate Professor of Education — 2720 Circle Drive

Norman Francis Conant (1935), Ph.D. (Harvard) — Route 3, Box 62
James B. Duke Professor of Microbiology — Garrett Road

Apostolos Condos (1966), Ph.D. (Iowa State) — Apartment 19
Assistant Professor of Economics — 1000 North Duke Street

Robert L. Cook (1965), Ph.D. (Notre Dame)
Assistant Professor of Physics — Carwin Apartments #6

Samuel D. Cook (1966), Ph.D. (Ohio State)
Associate Professor of Political Science — 804 Berkeley Street

Hallie M. Coppedge (1966), M.S.W. (North Carolina)
Associate in Psychiatric Social Work — 3435 Cromwell Road

Thomas Howard Cordle (1950), Ph.D. (Yale)
Associate Professor of Romance Langauges — 916 West Markham Avenue

Bruce A. Corrie (1965), M.S. (Indiana)
Assistant Professor of Physical Education — 2213 Carver Street

John D. Costlow (1959), Ph.D. (Duke) — 201 Ann Street
Associate Professor of Zoology — Beaufort, N. C.

R. Merritt Cox (1966), Ph.D. (Wisconsin) — Apartment 5A
Assistant Professor of Romance Languages — 1803 House Avenue

Robert Calvin Cox (1942), M.A. (Columbia)
Associate Professor of Physical Education — 1913 University Drive

Annabelle T. Craddock (1967), M.D. (Duke)
Associate in Anesthesiology in Department of Surgery — 2407 W. Club Boulevard

Joyce Crane (1960-62; 1964), M.S.N. (Western Reserve)
Associate Professor of Nursing — 2717 Augusta Drive

Robert Irwin Crane (1961), Ph.D. (Yale)
Professor of History — 2733 Sevier Street

Marion Caryle Crenshaw, Jr. (1964), M.D. (Duke)
Assistant Professor of Obstetrics and Gynecology and Associate in Physiology — Route 1, Roxboro Road

J. Christopher Crocker (1966), Ph.D. (Harvard) — Erwin Road
Assistant Professor of Anthropology — Route 1, Box 215

Kathryn Crossland (1967), Ed.D. (Florida)
Professor of Nursing — 3600 Tremont Drive

Elaine Kobrin Crovitz (1965), Ph.D. (Duke)
Assistant Professor of Medical Psychology in Department of Psychiatry and Lecturer in Psychology — 2745 Montgomery Street

Herbert Crovitz (1963), Ph.D. (Duke)
Associate Professor of Medical Psychology in Department of Psychiatry and Lecturer in Psychology — 2745 Montgomery Street

William L. Culberson (1955), Ph.D. (Wisconsin)
Associate Professor of Botany — King Road, Route 7

Charles Culver (1963), Ph.D. (Duke)
Assistant Professor of Nursing Education — 2920 Guess Road

John Cunningham (1967), M.A. (Duke)
Instructor in English — Box 9669 Duke Station

William D. Currie (1967), Ph.D. (North Carolina)
Assistant Professor of Radiology — 4142 Deepwood Circle

John Shelton Curtiss (1945), Ph.D. (Columbia)
James B. Duke Professor of History — 4418 Guess Road
Robert Earl Cushman (1945), B.D., Ph.D. (Yale)
Professor of Systematic Theology — 2719 Spencer Street
W. Kenneth Cuyler (1959), Ph.D. (Duke)
Professor of Obstetrics and Gynecology and Associate Professor of Cytology and Anatomy — Route 1, Box 52
Sandra M. Cypess (1967), M.A. (Cornell)
Instructor in Romance Languages — Glen Heights, Chapel Hill, N. C.
Bingham Dai (1943), Ph.D. (Chicago)
Professor of Psychology and Professor of Mental Hygiene — 2404 Perkins Road
Charles J. Daly (1963), M.Ed. (Pennsylvania State)
Instructor in Physical Education — 2307 Anthony Drive
Ollie B. Davenport (1961), M.S.N. (Western Reserve)
Assistant Professor of Nursing — 905 West Knox Street
Eugene A. Davidson (1957), Ph.D. (Columbia)
Professor of Biochemistry — 1639 Marion Avenue
David George Davies (1961), Ph.D. (California)
Professor of Economics — 2631 McDowell Street
William David Davies (1966), D.D. (Wales)
George Washington Ivey Professor of Advanced Studies in New Testament and Christian Origins — 405 Monticello Road
Calvin D. Davis (1962), Ph.D. (Indiana)
Associate Professor of History — Apartment 18, Alastair Court
Donald Max Davis (1966), A.M. (Michigan)
Temporary Instructor in Zoology — Rufus Drive
Gifford Davis (1930), Ph.D. (Harvard)
Professor of Romance Languages — 2248 Cranford Road
Morris Davis (1966), Ph.D. (Yale) — 404 Estes Drive
Adjunct Professor of Mathematics — Chapel Hill, N. C.
Otho L. Davis (1965), M.A. (Kent State)
Assistant Professor of Physical Education — 214 Landsbury Street
Eugene Davis Day (1962) Ph.D. (Delaware)
Professor of Immunology and Professor of Experimental Surgery — 2727 McDowell Street
Louis De Alessi (1961), Ph.D. (California)
Associate Professor of Economics — 2624 McDowell Street
John Essary Dees (1939), M.D. (Virginia)
Professor of Urology — 413 Carolina Circle
Mrs. Susan Coons Dees (1939), M.D. (Johns Hopkins)
Professor of Pediatrics — 413 Carolina Circle
Daniel W. Deis (1967), Ph.D. (Duke)
Instructor in Physics — 808 Lindley Drive
William J. DeMaria (1951), M.D. (Duke)
Professor of Community Health Sciences and Associate Professor of Pediatrics — 1126 Woodburn Road
Ingeborg Dent (1967), M.A.T. (Cologne) — 186 C Howell Street
Temporary Instructor in German — Chapel Hill, N. C.
Sara Jamison Dent (1955), M.D. (South Carolina) — Route 1, Box 21A
Professor of Anesthesiology — Hillsborough, N. C.
John C. Detwiler (1966), Th.M. (Duke)
Lecturer in Pastoral Care — 1619 Avondale Drive
Frank Traver de Vyver (1935), Ph.D. (Princeton)
Professor of Economics — 8 Sylvan Road

Irving Diamond (1958), Ph.D. (Chicago)
Professor of Psychology — 2745 McDowell Street

Joseph Di Bona (1967), Ph.D. (California)
Assistant Professor of Education — 1123 Woodburn Road

Luca Di Cecco (1966), M.M. (Indiana)
Assistant Professor of Music — 221 Cornwallis Road

Macdonald Dick (1932), M.D. (Johns Hopkins)
Assistant Professor of Physiology and Pharmacology and Associate in Medicine — 3005 Norwich Way

Robert L. Dickens (1949), M.S. (North Carolina), C.P.A., LL.D.
Professor of Accounting — 2717 Circle Drive

Marcus L. Dillon (1957), M.D. (Duke)
Associate Professor of Surgery — 1005 Minerva Avenue

William O. Dobbins (1965), M.D. (Medical College of Alabama)
Associate Professor of Medicine — 2431 Tryon Road

Mrs. Marie-Therese Liniere Dow (1934), M.A. (Lyon)
Assistant Professor of Romance Languages — 2252 Cranford Road

Neal Dow (1934), Ph.D. (Pennsylvania)
Professor of Romance Languages — 2252 Cranford Road

Roger W. Doyle (1967), Ph.D. (Yale)
Assistant Professor of Zoology — 818 E. Forest Hills Boulevard

Francis George Dressel (1929), Ph.D. (Duke)
Professor of Mathematics — 2502 Francis Street

Bernard I. Duffey (1963), Ph.D. (Ohio State)
Professor of English — 2732 Dogwood Drive

Kenneth Lindsay Duke (1940), Ph.D. (Duke)
Associate Professor of Anatomy — 2736 McDowell Street

Mrs. Frances Yeager Dunham (1962), Ph.D. (Duke)
Assistant Professor of Nursing Education — 2137 Wright Avenue, Greensboro, N. C.

Robert F. Durden (1952), Ph.D. (Princeton)
Professor of History — 2532 Wrightwood Avenue

Jiri Dvorak (1967), Cand. of Science (Czechoslava Academy of Sciences)
Assistant Professor of Civil Engineering — 2956 Friendship Drive

Paul H. Earls (1959), Ph.D. (Rochester)
Associate Professor of Music — 1509 Hollywood Street

Paul A. Ebert (1966), M.D. (Ohio State)
Assistant Professor of Surgery — 4004 Bristol Road

Ruth Buchanan Eddy (1952), M.S. (Smith)
Associate Professor of Physical Education — 702 Louise Circle

James Michael Efird (1962), Ph.D. (Duke)
Assistant Professor of Biblical Studies — R.F.D. 1, Box 210

Carl Eisdorfer (1958), M.D. (Duke), Ph.D. (New York)
Associate Professor of Medical Psychology and Associate Professor of Psychiatry — 3424 Hope Valley Road

Robert Eisenberg (1965), Ph.D. (University College, London)
Associate in Physiology — 3503 Mossdale Avenue

Jane G. Elchlepp (1960), M.D. (Iowa), Ph.D. (Chicago)
Associate Professor of Pathology — Route 1, Cornwallis Road

Everett H. Ellinwood (1966), M.D. (North Carolina)
Assistant Professor of Psychiatry — 4716 Stafford Road

William Whitfield Elliott (1925), Ph.D. (Cornell)
Professor of Mathematics — 1740 Hillandale Road

George J. Ellis (1967), M.D. (Harvard)
Associate in Medicine — 3200 Oxford Drive

Ernest Elsevier (1950), M.S.M.E. (Georgia Institute of Technology)
Associate Professor of Mechanical Engineering 2412 Wrightwood Avenue
Max D. Engelhart (1966), Ph.D. (Illinois)
Lecturer in Education 2419 Perkins Road
Mark L. Entman (1967), M.D. (Duke)
Associate in Medicine 73 C Colonial Apartments
Norbert Beverley Enzer (1965), M.D. (McGill)
Assistant Professor of Psychiatry and
Associate in Pediatrics 2017 Dartmouth Drive
Carl Erickson (1966), Ph.D. (Rutgers) Apartment 813
Assistant Professor of Psychology Poplar Apartments
Robert P. Erickson (1961), Ph.D. (Brown)
Associate Professor of Psychology 2601 Tanglewood Drive
E. Harvey Estes, Jr. (1953), M.D. (Emory)
Professor of Medicine and Professor of
Community Health Sciences 3542 Hamstead Court
John C. Evans (1967), M.D. (Michigan)
Professor of Radiology 1829 Front Street
Lawrence E. Evans (1963), Ph.D. (Johns Hopkins)
Assistant Professor of Physics 1020 Demerius Street
John Wendell Everett (1932), Ph.D. (Yale)
Professor of Anatomy 1105 Woodburn Road
Robinson Oscar Everett (1956), LL.B. (Harvard)
Professor of Law 1200 Leon Street, Apt. G8
Henry A. Fairbank (1962), Ph.D. (Yale)
Professor of Physics 1515 Pinecrest Road
Carmen M. Falcone (1946), M.A. (Ohio State)
Professor of Physical Education 1402 Woodburn Road
Donn Michael Farris (1959), B.D., M.S. in L.S. (Columbia)
Associate Professor of Theological Bibliography 921 Buchanan Boulevard
Ben W. Feather (1963), M.D. (George Washington), Ph.D. (Duke) Box 3403
Assistant Professor of Psychiatry and Lecturer in Psychology Duke Hospital
John Morton Fein (1950), Ph.D. (Harvard)
Professor of Romance Languages 2726 Montgomery Street
Robert E. Fellows (1966), M.D. (McGill) 3106 Ridge Road
Assistant Professor of Physiology and Assistant Professor of Medicine
Arthur Bowles Ferguson (1939), Ph.D. (Cornell)
Professor of History 22 Lebanon Circle
Oliver W. Ferguson (1957), Ph.D. (Illinois)
Professor of English 1212 Arnette Avenue
Heriberto A. Ferrari (1966), M.D. (Buenos Aires)
Assistant Professor of Anesthesiology
in Department of Surgery 3734 Swarthmore Road
Bernard F. Fetter (1951), M.D. (Duke)
Professor of Pathology 3836 Somerset Drive
Michael Finger (1965), Ph.D. (North Carolina)
Assistant Professor of Economics 1000 N. Duke Street, Apt. 41
Ronald L. Fishbaugh (1962), M.S. (Juilliard)
Instructor in Music 1112 Buchanan Boulevard
Walter L. Floyd (1959), M.D. (Johns Hopkins)
Assistant Professor of Medicine 3556 Hamstead Court
Donald J. Fluke (1958), Ph.D. (Yale)
Professor of Zoology 2703 Sevier Street
Diane G. Fogleman (1966), M.S. (North Carolina)
Instructor in Nursing 4424 South Alston Avenue

Lloyd R. Fortney (1964), Ph.D. (Wisconsin)
Assistant Professor of Physics — 1200 Leon Street, Apt. G2

Ellen Gwendolyn Fortune (1964), M.A. (Western Reserve)
Associate Professor of Nursing — 212 East Markham Avenue

Marianka Fousek (1965), Ph.D. (Harvard)
Assistant Professor of Religion — 2722 Erwin Road

Donald R. Fowler (1967), M.D. (Southwestern Med. School of Texas)
Associate in Psychiatry — Route 5, Box 564

Earle Cabell Fowler (1962), Ph.D. (Harvard) — Lake Shore Drive
Professor of Physics — Chapel Hill, N. C.

John Alvis Fowler (1953), M.D. (Bowman Gray)
Professor of Psychiatry and
Assistant Professor of Pediatrics — 1514 Edgevale Road

Wallace Fowlie (1964), Ph.D. (Harvard) — 2007 House Avenue
James B. Duke Professor of Romance Languages — Apartment 19

Charles H. Frenzel (1956), B.A. (Duke)
Professor of Hospital Administration — 3950 Bristol Road

Irwin Fridovich (1958), Ph.D. (Duke)
Associate Professor of Biochemistry — 3517 Courtland Drive

Ruth Friedberg (1961), M.A. (North Carolina)
Assistant Professor of Music — 2305 Elmwood

Samuel J. Friedberg (1960), M.D. (Pennsylvania)
Associate Professor of Medicine — 2305 Elmwood

Werner P. Friederich (1967), Ph.D. (Harvard) — 698 Gimghoul Street
Visiting Professor of German — Chapel Hill, N. C.

John A. Friedrich (1963), Ph.D. (Michigan State)
Professor of Physical Education — 2953 Welcome Drive

William J. Furbish (1954), M.S. (Wisconsin) — Route 2
Associate Professor of Geology — Hillsborough, N. C.

Mercedes Gaffron (1958), Ph.D. (Berlin), M.D. (Munich)
Associate Research Professor of Psychology — 1612 Maryland Avenue

Thomas Muir Gallie, Jr. (1954), Ph.D. (Rice)
Professor of Mathematics and
Professor of Biomathematics — 2740 Montgomery Street

†Clarence Ellsworth Gardner, Jr. (1930), M.D. (Johns Hopkins) — Blue Creek
Professor of Surgery — Blue Creek, Astor, Florida

Mrs. Ila H. Gehman (1959), Ed.D. (Pennsylvania State)
Associate Professor of Medical Psychology in
Department of Psychiatry and Lecturer in Psychology — 2703 Spencer Street

W. Scott Gehman, Jr. (1954), Ph.D. (Pennsylvania State)
Associate Professor of Psychology in Education — 2703 Spencer Street

John A. Gehweiler (1967), M.D. (Duke)
Associate in Radiology — 3551 Hamstead Court

Ernest A. E. Gellhorn (1966), LL.B. (Minnesota)
Associate Professor of Law — 2517 Wrightwood Avenue

Rhett Truesdale George, Jr. (1957), Ph.D. (Florida)
Assistant Professor of Electrical Engineering — 3803 Tremont Drive

Nicholas G. Georgiade (1951), D.D.S., M.D. (Duke)
Professor of Plastic Maxillofacial and Oral Surgery — 2523 Wrightwood Avenue

Carl J. Gerber (1963), Ph.D. (Washington)
Assistant Professor of Neurology and
Associate in Physiology — 106 Lattimore Lane

† Retired 2-29-68

Gerald E. Gerber (1962), Ph.D. (Northwestern)
Assistant Professor of English — 2602 Francis Street
Barbara B. Germino (1965), B.S.N. (Duke)
Instructor in Nursing — Snow Hill Farm, Bahama, N. C.
Robert George Ghirardelli (1962), Ph.D. (California Institute of Technology)
Visiting Assistant Professor of Chemistry — 1404 Anderson Street
Daniel T. Gianturco (1966), M.D. (Buffalo)
Associate in Psychiatry — 4833 Stafford Drive
Robert H. Gibbs (1964), M.D. (Duke)
Assistant Professor of Medicine and Assistant Professor of Physiology — 2413 Pickett Road
Donald Gillin (1959), Ph.D. (Stanford)
Associate Professor of History — 1300 Georgia Avenue
Malcolm Gillis (1967), M.A. (Florida)
Assistant Professor of Economics — Apt. 69 A, Colonial Apartments
James P. Gills (1965), M.D. (Duke)
Assistant Professor of Ophthalmology — 2528 Wrightwood Avenue
†Donald E. Ginter (1963), Ph.D. (California)
Assistant Professor of History — 1918 Dartmouth Drive
Sherwood Githens, Jr. (1962), Ph.D. (North Carolina)
Professor of Education — 4427 Chapel Hill Road
James F. Glenn (1963), M.D. (Duke)
Professor of Urology — 27 Oak Drive
Clarence Gohdes (1930), Ph.D. (Columbia)
James B. Duke Professor of English — 2737 Circle Drive
Joseph Leonard Goldner (1950), M.D. (Nebraska)
Professor of Orthopedic Surgery — 602 East Forest Hills Boulevard
Richard A. Goodling (1959), B.D., Ph.D. (Pennsylvania State)
Professor of Pastoral Care — Box 115-A, Route 1, Farrington Road
Jack K. Goodrich (1965), M.D. (Tennessee)
Associate Professor of Radiology — 2940 Welcome Drive
Craufurd D. Goodwin (1962), Ph.D. (Duke)
Associate Professor of Economics — 2256 Cranford Road
Walter Gordy (1946), Ph.D. (North Carolina), LL.D.
James B. Duke Professor of Physics — 2521 Perkins Road
John A. Goree (1959), M.D. (Duke)
Associate Professor of Radiology — 3817 Hillgrand Circle
Ralph J. Gorten (1963), M.D. (Pennsylvania)
Assistant Professor of Medicine and Assistant Professor of Radiology — 2436 Tryon Road
Virginia Gover (1960), M.S.N. (Boston College)
Assistant Professor of Nursing — 2722 Brown Avenue
James D. Graham (1967), M.A. (Northwestern)
Instructor in History — 1713 James Street
Lindsay A. Graham (1965), M.D. (McGill)
Assistant Professor of Psychiatry — 2918 Friendship Road
Richard Babson Grant (1952), Ph.D. (Harvard)
Associate Professor of Romance Languages — 2509 Wrightwood Avenue
Robert Lee Green, Jr. (1960), M.D. (Hahnemann)
Associate Professor of Psychiatry — 3700 Hermine Street
Ronald C. Greene (1958), Ph.D. (California Institute of Technology)
Assistant Professor of Biochemistry — 1014 Norwood Avenue

† Leave of absence academic year 1967-68

Joseph C. Greenfield (1962), M.D. (Emory)
Associate Professor of Medicine and Assistant Professor of Physiology — 1212 Virginia Avenue

John R. Gregg (1957), Ph.D. (Princeton)
Professor of Zoology — 3702 Randolph Road

Robert A. Gregg (1961), M.D. (South Carolina)
Associate Professor of Physical Medicine — 2747 Sevier Street

Eugene Greuling (1948), Ph.D. (Indiana)
Professor of Physics — 2414 Perkins Road

Keith Sanford Grimson (1930-42; 1945), M.D. (Rush)
Professor of Surgery — 3313 Devon Road

Egil Grislis (1959), B.D., Ph.D. (Yale)
Associate Professor of Historical Theology — 2323 Englewood Avenue

Samson R. Gross (1960), Ph.D. (Columbia)
Professor of Genetics and Biochemistry — 2411 Prince Street

Grzybowski, Kazimierz (1967), S.J.D. (Harvard)
Adjunct Professor of Political Science — 2605 University Drive

Walter R. Guild (1960), Ph.D. (Yale)
Professor of Biophysics — 2625 McDowell Street

J. Caulie Gunnells (1962), M.D. (South Carolina)
Assistant Professor of Medicine — 3317 Devon Road

Norman Guttman (1951), Ph.D. (Indiana)
Professor of Psychology — 201 Woodridge Drive

Robert A. Guyer (1964), Ph.D. (Cornell)
Assistant Professor of Physics — 1030 W. Trinity Avenue

*Hans Georg Haas (1967), M.D. (Bonn), Ph.D. (Cologne)
Visiting Professor of Physiology — 45 C Colonial Apartments

Donald B. Hackel (1960), M.D. (Harvard)
Professor of Pathology — 4018 Bristol Road

Herbert Hacker, Jr. (1965), Ph.D. (Michigan)
Assistant Professor of Electrical Engineering — 2739 Montgomery Street

Ellis P. Hagler (1936)
Instructor in Physical Education — 1715 Cornwallis Road

Hugh Marshall Hall (1952), Ph.D. (Texas)
Associate Professor of Political Science — 2413 Wrightwood Avenue

Jack R. Hall (1965), M.A. (Georgia)
Instructor in Physical Education — 3329 Rolling Hill Road

Kenneth D. Hall (1958), M.D. (Duke)
Associate Professor of Anesthesiology — 2715 Montgomery Street

Louise Hall (1931), Ph.D. (Radcliffe)
Professor of Architecture — Box 6636, College Station

Thor Hall (1962), B.D., Ph.D. (Duke)
Assistant Professor of Preaching and Theology — 3537 Hamstead Court

John Hamilton Hallowell (1942), Ph.D. (Princeton)
Professor of Political Science — 3606 Darwin Road

Iain Hamilton (1962), B.M. (London) — Erwin Apartments
Mary Duke Biddle Professor of Music — Buchanan Boulevard

William Baskerville Hamilton (1936), Ph.D. (Duke) — 300 Swift Avenue
Professor of History — Alastair Court Apartments

Moo Young Han (1967), Ph.D. (Rochester)
Assistant Professor of Physics — 3309 Powers Lane

Philip Handler (1939), Ph.D. (Illinois)
James B. Duke Professor of Biochemistry and Nutrition — 2529 Perkins Road

* Through 12-31-67

Robert M. Hankin (1966), M.A. (Columbia)
Assistant Professor of Slavic Languages — 111 West Seeman Street

John Kennedy Hanks (1954), M.A. (Columbia)
Professor of Music and Lecturer in Church Music — 1810 Glendale Avenue

Frank Allan Hanna (1948), Ph.D. (Wisconsin)
Professor of Economics — 2239 Cranford Road

Oscar Carl Edvard Hansen-Prüss (1930), M.D. (Johns Hopkins)
Professor of Medicine — 3303 Surrey Road

Paul Hardin, III (1958), LL.B. (Duke)
Professor of Law and Assistant Professor of Legal Medicine — 2708 Sevier Street

†Charles M. Harman (1961), Ph.D. (Wisconsin)
Associate Professor of Mechanical Engineering — 2620 McDowell Street

Ellwood Scott Harrar (1936), Ph.D. (Syracuse), Sc.D.
James B. Duke Professor of Wood Science — 2228 Cranford Road

Cecil Craig Harris (1967), M.S. (Tennessee)
Assistant Professor of Medical Electronics — 1911 C House Ave., Apt. 52

Harold Joseph Harris (1960), M.D. (Long Island College of Medicine)
Associate Professor of Psychiatry and Assistant Professor of Pediatrics — 1009 Highland Woods, Chapel Hill, N. C.

Jerome Sylvan Harris (1936), M.D. (Harvard)
J. Buren Sidbury Professor of Pediatrics and Associate Professor of Biochemistry — 2907 Hope Valley Road

James E. Hart (1966), A. B. (Harvard)
Assistant Professor of Political Science — 500 Watts Street

William John Harvey (1961), B.S. (Appalachian)
Assistant Professor of Physical Education — N-3A University Apartments

George Corbin Harwell (1935), Ph.D. (Duke)
Associate Professor of English — 2115 Wilson Street

Charles Roy Hauser (1929), Ph.D. (Iowa)
James B. Duke Professor of Chemistry — 1020 Rosehill Avenue

Clark C. Havighurst (1964), J.D. (Northwestern)
Associate Professor of Law — 307 Watts Street, Apartment D

Charles P. Hayes (1964), M.D. (Duke)
Assistant Professor of Medicine — 3820 Hillgrand Circle

George S. Hayne (1967), Ph.D. (Yale)
Instructor in Physics — 2500 Nation Avenue

William S. Heckscher (1966), Ph.D. (Hamburg)
Benjamin N. Duke Professor of Art — P. O. Box 6605, College Station

Peter L. Hein (1963), M.D. (Georgetown)
Associate Professor of Psychiatry — 2511 Perkins Road

Ursula I. Heine (1965), Ph.D. (Humboldt)
Associate in Experimental Surgery — 1200 Leon Street, Apartment D-7

Martin Helling (1965), Ph.D. (Berkeley)
Assistant Professor of Mathematics — 1007 Oakland Avenue

Henry Hellmers (1965), Ph.D. (California)
Professor of Botany — 1012 Norwood Avenue

James Paisley Hendrix (1938), M.D. (Pennsylvania)
Professor of Medicine and Therapeutics — 144 Pinecrest Road

Mrs. Mildred L. Hendrix (1958), B.S. (North Carolina)
Part-Time Assistant Professor of Music — 144 Pinecrest Road

James Donald Henry (1960), M.M. (Indiana)
Assistant Professor of Music — 311 West Delafield Street

† Leave of absence 1967-68

Stuart C. Henry (1959), B.D., Ph.D. (Duke)
Professor of American Christianity — K-1-A University Apartments

C. Ward Henson (1967), Ph.D. (Massachusetts Institute of Technology)
Assistant Professor of Mathematics — 1702 Vista Street

Stephen Duncan Heron, Jr. (1950), Ph.D. (North Carolina)
Associate Professor Geology — Route 1, Box 92

David G. Herr (1967), Ph.D. (North Carolina)
Assistant Professor of Mathematics — 3112 Camelot Street

Clyde F. Herreid, II (1965), Ph.D. (Pennsylvania State)
Temporary Assistant Professor of Zoology — Route 2, Box 420 D

Javier Herrero (1966), Ph.D. (Madrid)
Professor of Romance Languages — 1013 Demerius Street

Frederick L. Herzog (1960), Th.D. (Princeton)
Professor of Systematic Theology — 2936 Chapel Hill Road

Julia G. Hester (1965), M.S. (North Carolina)
Assistant Professor of Nursing — Colonial Apartments, 7 D

Stephen L. Hester (1967), LL.B. (Harvard) — Colony Apartments, L-20
Visiting Assistant Professor of Law — Chapel Hill, N. C.

Siegfried Heyden (1966), M.D. (Berlin)
Associate Professor of Community Health Sciences — 1407 Arnette Avenue

Albert Heyman (1953), M.D. (Maryland)
Professor of Medicine — 1216 Woodburn Road

Jacqueline Hijmans (1965), M.D. (State University, Leyden, Holland)
Associate in Medicine — 2907 Hope Valley Road

David W. Hill (1962), Ph.D. (Stanford)
Associate Professor of Engineering Mechanics in Department of Civil Engineering — 205 Wood Circle, Chapel Hill, N. C.

Douglas Greenwood Hill (1931), Ph.D. (Princeton)
Professor of Chemistry — Box 275, Route 2, Pleasant Green Road

Gale B. Hill (1967), Ph.D. (Duke) — 4300 W. Galax Drive
Associate in Radiology — Raleigh, N. C.

Robert L. Hill (1961), Ph.D. (Kansas)
Professor of Biochemistry — 2510 Perkins Avenue

Hans J. Hillerbrand (1959), Ph.D. (Erlangen)
Professor of Modern Church History and Professor of History — 2729 Sevier Street

Frederick R. Hine (1958), M.D. (Yale)
Associate Professor of Psychiatry — 2317 Prince Street

Marcus Edwin Hobbs (1935), Ph.D. (Duke)
Professor of Chemistry — 115 Pinecrest Road

William H. Hobbs (1967), B.S. (Virginia Polytechnic Institute), Lt., U.S.N.R.
Assistant Professor of Naval Science — Colonial Apartments, 46 D

Paul E. Hochstein (1963), Ph.D. (Maryland)
Associate Professor of Pharmacology — 2027 Bivins Street

Richard Earl Hodel (1965), Ph.D. (Duke)
Assistant Professor of Mathematics — Colonial Apartments

C. S. Hodges (1963), Ph.D. (Georgia) — 505 Pleasants Avenue
Adjunct Associate Professor of Forest Pathology — Cary, N. C.

Charlotte Hogsett (1965), Ph.D. (Harvard)
Assistant Professor of Romance Languages — 708 Louise Circle

Mrs. Carol Clarke Hogue (1963), M.S.N. (Duke)
Assistant Professor of Nursing — 2913 Welcome Drive

Irving Brinton Holley, Jr. (1947), Ph.D. (Yale)
Professor of History — 2506 Wrightwood Avenue

Peter W. Holloway (1967), Ph.D. (Manchester University)
Associate in Biochemistry — Morreene Manor, Apt. H2

Frederic B. M. Hollyday (1956), Ph.D. (Duke)
Associate Professor of History — 1824 Forest Road

Frances Virginia Lee Holton (1947), M.A. (Texas State)
Associate Professor of Physical Education — 407 Erwin Apartments

Everett Harold Hopkins (1961), A.M. (Pennsylvania), LL.D.
Professor of Education — 2016 Campus Drive

Edward Charles Horn (1946), Ph.D. (Princeton), Sc.D.
Professor of Zoology — 818 East Forest Hills Boulevard

Paul Horowicz (1961), Ph.D. (Johns Hopkins)
Associate Professor of Physiology — 216 West Woodridge Drive

Theresa Elizabeth Horton (1964), M.S.N.E. (Pittsburgh) — Apartment 3
Assistant Professor of Nursing — 810 Clarendon Street

Betty Lee Hubbard (1967), Ph.D. (North Carolina)
Associate in Psychiatry — 35 Hamilton Road, Chapel Hill, N. C.

William R. Hudson (1961), M.D. (Bowman Gray)
Professor of Otolaryngology — 1102 Englewood Avenue

Alexander Hull (1962), Ph.D. (Washington)
Associate Professor of Romance Languages — 2318 Prince Street

†Mrs. Wanda Sanborn Hunter (1947), Ph.D. (California) — 2723 Brown Avenue
Associate Professor of Zoology — Apartment D, Poplar Apartments

Allan S. Hurlburt (1956), Ph.D. (Cornell)
Professor of Education — 112 Buchanan Boulevard

Mrs. Mary Martin Huse (1959), Ph.D. (Duke)
Assistant Professor of Medical Psychology in Department of Psychiatry and Lecturer in Psychology — Ephesus Chapel Road

O. Kelly Ingram (1959), B.D. (Duke)
Associate Professor of Applied Theology — 2728 Sevier Street

Wallace Jackson (1965), Ph.D. (Pennsylvania)
Assistant Professor of English — 1006 West Knox Street

Ann Madeline Jacobansky (1953), M.Ed. (Pittsburgh)
Professor of Nursing — 1200 Leon Street, Apt. H-8

John F. Jarvis (1967), Ph.D. (Duke)
Instructor in Physics — 2212 Elba Street, Apt. B

Peter Walter Jeffs (1964), Ph.D. (Natal)
Associate Professor of Chemistry — 3209 Cromwell Road

Marianna Duncan Jenkins (1948), Ph.D. (Byrn Mawr)
Associate Professor of Art — 1000 N. Duke Street

Alan W. Jenks (1966), Th.D. (Harvard)
Visiting Assistant Professor of Religion — 1025 Dacian Avenue

Edward M. Jennings, III (1965), Ph.D. (Wisconsin)
Assistant Professor of English — 2951 Friendship Road

Bronislas de Leval Jezierski (1958), Ph.D. (Harvard)
Associate Professor of Slavic Literatures — 3800 Hillgrand Drive

John P. Jimenez (1965), M.D. (Medical College of Virginia)
Assistant Professor of Radiology — 1911-C House Avenue, Apartment 55

Frans F. Jobsis (1964), Ph.D. (Michigan)
Associate Professor of Physiology — 1542 Hermitage Court

Frederick Charles Joerg (1947), M.B.A. (Harvard)
Professor of Business Administration — 2424 Wrightwood Avenue

Charles B. Johnson (1956), Ed.D. (Duke)
Associate Professor of Education — 2714 McDowell Street

† Leave of absence 2-1-68 through 1-31-69

Edward Anthony Johnson (1963), M.D. (Sheffield)
Associate Professor of Pharmacology — 1408 Shepherd Street

Joseph Johnson (1967), Ed.D. (Virginia)
Assistant Professor of Education — 3411 Mossdale

Terry Walter Johnson, Jr. (1954), Ph.D. (Michigan)
Professor of Botany — 2408 Prince Street

Irwin S. Johnsrude (1966), M.D. (Manitoba)
Assistant Professor of Radiology — 3324 Rolling Hill Road

John Devereaux Johnston (1962), LL.B. (Duke)
Associate Professor of Law — 2810 Chelsea Circle

William Webb Johnston (1963), M.D. (Duke)
Assistant Professor of Pathology — Box 3436 Duke Hospital

William T. Joines (1966), Ph.D. (Duke)
Assistant Professor of Electrical Engineering — 4010 Deepwood Circle

Barney L. Jones (1956), B.D., Ph.D. (Duke)
Associate Professor of Religion — 2622 Pickett Road

Buford Jones (1962), Ph.D. (Harvard)
Assistant Professor of English — 908 West Markham Avenue

Edward Ellsworth Jones (1953), Ph.D. (Harvard)
Professor of Psychology — 2738 Sevier Street

James David Jones (1963), M.D. (Duke)
Assistant Professor of Psychiatry and Associate in Pediatrics — 3851 Somerset Drive

Leon Lloyd Jones (1963), Ph.D. (Utah)
Assistant Professor of Chemistry — 2610 Indian Trail

Oliver William Jones, Jr. (1963), M.D. (Oklahoma)
Assistant Professor of Medicine and Assistant Professor of Microbiology — 5408 Beaumont Drive

Ronald L. Jones (1966), B.A. (Vanderbilt)
Temporary Instructor in History — 1804 Bivins Street

Jayant G. Joshi (1967), Ph.D. (India)
Associate in Biochemistry — 1914 Jersey Avenue

Helen Louise Kaiser (1943), R.P.T. (Harvard)
Associate Professor of Physical Therapy — 1201 Dwire Place

William Arthur Kale (1952), B.D., D.D. (Duke)
Professor of Christian Education — 500 East Markham Avenue

Henry Kamin (1948), Ph.D. (Duke)
Professor of Biochemistry — 2417 Perkins Road

Henry J. Katz (1967), B.S. (United States Military Academy)
Temporary Instructor in Mathematics — 1118 Woodburn Road

William J. Katzenmeyer (1967), Ed.D. (Duke)
Associate Professor of Education — 1636 Marion Avenue

Charles Rush Keith (1963), M.D. (Kansas)
Assistant Professor of Psychiatry — Route 1, Chapel Hill, N. C.

Thomas F. Keller (1959), Ph.D. (Michigan)
Professor of Business Administration — 1024 West Markham Avenue

Walter Kempner (1934), M.D. (Heidelberg)
Professor of Medicine — 1505 Virginia Avenue

Patrick Dan Kenan (1965), M.D. (Duke)
Assistant Professor of Otolaryngology — 804 Anderson Street

Patricia Kennedy (1966), M.S. (Emory)
Instructor in Nursing — Valley Terrace Apts., 28-H

Van Leslie Kenyon, Jr. (1945), M.M.E. (Virginia)
Professor of Mechanical Engineering — Route 2, Hillsborough, N. C.

Grace Pardridge Kerby (1947), M.D. (Duke)
Professor of Medicine — 1108 Wells Street

Alan C. Kerckhoff (1958), Ph.D. (Wisconsin)
Professor of Sociology — 1511 Pinecrest Road

Robert B. Kerr (1965), Ph.D. (Johns Hopkins)
Associate Professor of Electrical Engineering — 2220 Elmwood Avenue

*Nathan Keyfitz (1967), Ph.D. (Chicago)
Visiting Professor of Sociology — 3022 Chapel Hill Road, Apt. 2C

Kaye H. Kilburn (1962), M.D. (Utah)
Associate Professor of Medicine — 1 V.A. Staff Apartments

†Seuk Ky Kim (1963), M.D. (Severance)
Assistant Professor of Radiology — E-2 1200 Leon Street

Gregory Adams Kimble (1952), Ph.D. (Iowa State)
Professor of Psychology — 2513 Wrightwood Avenue

Burton B. King (1967), M.A. (Northwestern)
Associate in Surgery — 3404 Duke Homestead Road

James Leroy King (1967), M.D. (Bowman Gray)
Associate in Anesthesia — 1620 University Drive

Thomas DeArman Kinney (1960), M.D. (Duke)
R. J. Reynolds Tobacco Company Professor of Medical Education and Professor of Pathology — 3120 Devon Road

Marcel Kinsbourne (1967), M.D. (Christ Church)
Associate Professor of Pediatrics and Neurology and Lecturer in Psychology — 2308 Prince Street

Warren Kirkendale (1967), Ph.D. (Vienna)
Associate Professor of Music — 2410 Glendale Avenue

Norman Kirshner (1956), Ph.D. (Pennsylvania State)
Associate Professor of Biochemistry — 2524 Wrightwood Avenue

Joseph Weston Kitchen, Jr. (1962), Ph.D. (Harvard)
Assistant Professor of Mathematics — 1600 Delaware Avenue

Gunter Klabes (1965), B.A. (Freiburg, Germany)
Temporary Instructor in German — 801 Underwood Avenue

Robert Frederick Klein (1963), M.D. (Alabama)
Assistant Professor of Medicine — 2740 Spencer Street

Gordon K. Klintworth (1964)
Assistant Professor of Pathology — 614 Starmont Drive

Peter H. Klopfer (1958), Ph.D. (Yale)
Professor of Zoology — Route 1, Box 293

Conrad Merton Knight (1961), B.S. (Norwich)
Associate in Community Health Sciences and Associate in Radiology — 4603 Blanchard Road

Douglas Maitland Knight (1963), Ph.D. (Yale), Litt.D., LL.D., L.H.D.
Professor of English — 1508 Pinecrest Road

F. X. Calvin Knobeloch (1967), Ph.D. (Florida)
Associate in Speech Pathology and Audiology, Department of Surgery — 121 Larkspur Circle

Kenneth R. Knoerr (1961), Ph.D. (Yale)
Associate Professor of Forest Meteorology — 4429 Ryan Road

Stephen D. Koch (1967), M.S. (Michigan)
Temporary Instructor in Botany — 3600 Tremont Drive, A4

Yi-Hong Kong (1967), M.D. (National Defence Medical Center)
Associate in Medicine — 3822 Hillgrand Drive

* Through 1-31-68
† Resigned 4-30-68

Allan Kornberg (1965), Ph.D. (Michigan)
Associate Professor of Political Science — 2737 Sevier Street

Wesley Kort (1965), Ph.D. (Chicago)
Assistant Professor of Religion — 3514 Winding Way

Jack L. Kostyo (1959), Ph.D. (Cornell)
Professor of Physiology — 604 Starmont Drive

Mrs. Helen T. Kotin (1967), M.D. (Colorado)
Associate in Community Health Sciences — Iris Lane, Chapel Hill, N. C.

Paul Jackson Kramer (1931), Ph.D. (Ohio State)
James B. Duke Professor of Botany — 2251 Cranford Drive

Frederick H. Krantz (1965), A.B. (Columbia)
Instructor in History — 808 Berkeley Street

Edward Kready Kraybill (1939), Ph.D. (Michigan)
Associate Professor of Electrical Engineering — 2726 Circle Drive

Sandra Jo Krebs (1967), M.A. (Middlebury)
Temporary Instructor in German — 1102 Monmouth Avenue

Irwin Kremen (1963), Ph.D. (Harvard)
Assistant Professor of Psychology and Assistant Professor of Medical Psychology in the Department of Psychiatry — 216 Forestwood Drive

William B. Kremer (1966), M.D. (Upstate Medical School) — Route 2
Associate in Medicine — Hillsborough, N. C.

Mrs. Juanita M. Kreps (1955), Ph.D. (Duke) — Morgan Creek Road
Professor of Economics — Chapel Hill, N. C.

William R. Krigbaum (1952), Ph.D. (Illinois), D.Sc.
Professor of Chemistry — 2504 Wilson Street

Robert C. Krueger (1961), D.Phil. (Oxon.)
Assistant Professor of English — Route 2, Box 388A

Arnold D. Krugman (1964), Ph.D. (Kentucky)
Associate Professor of Medical Psychology in the Department of Psychiatry and Lecturer in Psychology — 2605 Tanglewood Drive

Magnus Jan Krynski (1966), Ph.D. (Columbia)
Associate Professor of Slavic Literatures — 405 Watts Street

W. W. Kulski (1963), LL.D. (Paris)
James B. Duke Professor of Russian Affairs in Department of Political Science — 1624 Marion Avenue

Sudhir Kumar (1959), Ph.D. (Pennsylvania)
Visiting Associate Professor of Civil Engineering — 2014 Sprunt Street

Johannes A. Kylstra (1965), M.D., Ph.D. (Leiden)
Associate Professor of Medicine and Assistant Professor of Psysiology — 2924 Friendship Road

Mrs. Maurine Boie LaBarre (1961), M.S.W. (Bryn Mawr)
Assistant Professor of Psychiatric Social Work — Mt. Sinai Road, Route 1

Weston La Barre (1946), Ph.D. (Yale)
Professor of Anthropology — Mt. Sinai Road, Route 1

Leon Lack (1965), Ph.D. (Columbia)
Associate Professor of Pharmacology — 1521 Hermitage Court

Creighton Lacy (1953), B.D., Ph.D. (Yale)
Professor of World Christianity — 2714 Dogwood Road

Martin Lakin (1958), Ph.D. (Chicago)
Associate Professor of Medical Psychology in Department of Psychiatry and Associate Professor of Psychology — 2709 McDowell Street

Thomas A. Langford (1956), B.D., Ph.D. (Duke)
Professor of Religion — 2002 Dartmouth Drive

John Tate Lanning (1927), Ph.D. (California)
James B. Duke Professor of History — 3007 Surrey Road

John E. Larsh, Jr. (1943), Sc.D. (Johns Hopkins) — Memorial Hospital
Professor of Parasitology — Chapel Hill, N .C.

Arthur Larson (1958), D.C.L. (Oxon.)
Professor of Law — 3408 Dover Road

John Laszlo (1960), M.D. (Harvard)
Associate Professor of Medicine — Cornwallis Road

Elvin Remus Latty (1937), J.Sc.D. (Columbia)
William R. Perkins Professor of Law — 3620 Hathaway Road

Patricia Lawrence (1964), M.A. (Columbia)
Assistant Professor of Nursing — 4711 Easley Street

Richard H. Leach (1955), Ph.D. (Princeton)
Professor of Political Science — 1313 Woodburn Road

John LeBar (1965), M.S. (Kansas State Teachers College)
Assistant Professor of Physical Education — 923 Demerius Street

Harold E. Lebovitz (1962), M.D. (Pittsburgh)
Associate Professor of Medicine — 1900 Dartmouth Drive

Chien Ping Lee (1966), Ph.D. (Duke)
Associate in Physiology — 2501 West Club Boulevard

John C. LeMay (1961), D.V.M. (Georgia) — Goodwin Road
Associate Professor of Veterinary Medicine — Route 2, Box 214

Warren Lerner (1961), Ph.D. (Columbia)
Associate Professor of History — 2104 Dartmouth Drive

Richard G. Lester (1965), M.D. (Columbia)
Professor of Radiology — 2703 Montgomery Avenue

Donald S. Leventhal (1965), Ph.D. (Purdue)
Associate in Medical Psychology — 4002 Hillgrand Circle

Harold Walter Lewis (1946), Ph.D. (Duke)
Professor of Physics — 1708 Woodburn Road

Martha Modena Lewis (1933), M.A. (Columbia)
Professor of Physical Education — 407 Erwin Apartments

Ralph Elton Lewis (1941), M.S. in M.E. (Illinois)
Assistant Professor of Mechanical Engineering — 1401 Alabama Avenue

John L. Lievsay (1962), Ph.D. (Washington)
Professor of English — 2725 Montgomery Street

Darwyn E. Linder (1965), Ph.D. (Minnesota)
Assistant Professor of Psychology — 4029 Nottaway Road

L. Sigfred Linderoth (1965), M.E. (Iowa State)
Professor of Mechanical Engineering — 2220 Whitley Drive

Nelson R. Lipshutz (1967), Ph.D. (Chicago)
Instructor in Physics — 3600 Tremont Drive, G9

Charles Harris Livengood, Jr. (1946), LL.B. (Harvard)
Professor of Law — 2804 Chelsea Circle

Daniel A. Livingstone (1956), Ph.D. (Yale)
Professor of Zoology — 626 Starmont Drive

Charles E. Llewellyn, Jr. (1955), M.D. (Medical College of Virginia)
Associate Professor of Psychiatry — 3550 Hamstead Court

Jane Marie Lloyd (1961), M.A. (North Carolina)
Assistant Professor of Physical Education — 704 Louise Circle

Gregory Lockhead (1965), Ph.D. (Johns Hopkins)
Assistant Professor of Psychology — 101 Emerald Circle

Ernest Croft Long (1956), M.B., B.S., Ph.D. (London)
Professor of Community Health Sciences,
Associate Professor of Physiology and Pharmacology, and
Associate in Pediatrics — Route 1, Box 204B, Erwin Road

James R. Lord (1967), Th.M. (Duke)
Instructor in Religion — 1000 N. Duke Street, Apt. 19

Hans Löwenbach (1940), M.D. (Hamburg)
Professor of Psychiatry and Assistant Professor of Pediatrics — Route 3, Box 309, Old Apex Road

*Charles Lucien Baker Lowndes (1934), S.J.D. (Harvard)
James B. Duke Professor of Law — 2016 Club Boulevard

William S. Lynn, Jr. (1954), M.D. (Columbia)
Professor of Medicine and Associate Professor of Biochemistry — 4014 Bristol Road

George M. Lyon, Jr. (1967), M.D. (Duke)
Assistant Professor of Pediatrics — 1510 Southwood Drive

George W. Lynts (1965), Ph.D. (Wisconsin)
Assistant Professor of Geology — 3328 Rolling Hill Road

Angus M. McBryde (1931), M.D. (Pennsylvania)
Professor of Pediatrics — 3406 Westover Road

Kenneth Scott McCarty (1959), Ph.D. (Columbia)
Associate Professor of Biochemistry — 2713 Dogwood Road

Dianna McClung (1966), B.A. (North Carolina) — 29 Oakwood Drive
Temporary Instructor in German — Chapel Hill, N. C.

Thomas E. McCollough (1961), Th.D. (Southern Baptist Theological Seminary)
Associate Professor of Religion — 2227 Cranford Road

Donald E. McCollum (1962), M.D. (Bowman Gray)
Associate Professor of Orthopedic Surgery — 2207 Wilshire Drive

William Charles McCormack (1964), Ph.D. (Chicago)
Associate Professor of Sociology — 1326 Welcome Circle

Alice L. McCrea (1961), M.S. (Chicago)
Assistant Professor of Radiation Therapy — Route 2, Umstead Road

Betty Foster McCue (1964), Ph.D. (Iowa State)
Professor of Physical Education — 3349 Denise Street

†Patrick M. McDonald (1967), Ph.D. (Northwestern) — 3120 Tanager Street
Visting Professor of Civil Engineering — Raleigh, N. C.

Frederick D. McFalls (1962), M.D. (Duke)
Assistant Professor of Anatomy — 911 Morehead Avenue

John S. McGee (1962), Ph.D. (Vanderbilt)
Professor of Economics — 2704 Sevier Street

Gelolo McHugh (1946), Ph.D. (Columbia)
Associate Professor of Psychology — 1010 Monmouth Avenue

Henry Deane McIntosh (1955), M.D. (Pennsylvania)
Professor of Medicine — 2705 Stuart Drive

John C. McKinney (1957), Ph.D. (Michigan)
Professor of Sociology and Professor of Medical Sociology in Department of Psychiatry — 1627 Marion Avenue

Mary Helen McLachlan (1958), M.A. (Missouri)
Associate Professor of Dietetics — 2022 Bivins Street

Michael E. McLeod (1966), M.D. (Duke)
Associate in Medicine — 4007 Deepwood Circle

Thomas Joseph McManus (1961), M.D. (Boston)
Associate Professor of Physiology and Pharmacology — 1408 Oakland Avenue

**Robert E. McMasters (1966), M.D. (Texas) — Apartment 28
Associate in Anatomy and Associate in Neurology — 1100 Leon Street

Harry Thurman McPherson (1955), M.D. (Duke)
Associate Professor of Medicine — 3915 Nottaway Road

* Deceased 7-28-67
† Through 1-31-68
** Resigned 5-16-68

John Nelson Macduff (1956), M.M.E. (New York)
Professor of Mechanical Engineering — 2733 Dogwood Road

George L. Maddox (1960), Ph.D. (Michigan State)
Professor of Sociology and Professor of Medical Sociology in Department of Psychiatry — 2750 McDowell Street

Moses S. Mahaley (1965), Ph.D. (Duke)
Assistant Professor of Neurosurgery, and Assistant Professor of Anatomy — 3534 Hamstead Court

Edward P. Mahoney (1965), Ph.D. (Columbia)
Assistant Professor of Philosophy — 918 Monmouth Avenue

Joseph Eldridge Markee (1943), Ph.D. (Chicago)
James B. Duke Professor of Anatomy — 1015 Demerius Street

Sidney David Markman (1947), Ph.D. (Columbia)
Professor of Art History and Archaeology — 919 Urban Avenue

David V. Martin (1962), Ed.D. (Duke)
Associate Professor of Education — 2312 Wilson Street

*Donald J. Massaro (1967), M.D. (Georgetown)
Associate Professor of Medicine — 2957 Welcome Drive

Raymond Massengill, Jr. (1964), Ph.D. (Virginia)
Associate in Medical Speech Pathology in the Department of Surgery — 2734 Spencer Street

Charles U. Mauney (1967), Ph.D. (North Carolina)
Associate in Pathology — 101 Hamilton Road, Chapel Hill, N. C.

F. Maxton Mauney (1967), M.D. (Duke)
Assistant Professor of Surgery — 118 Newell Street

Seymour Mauskopf (1964), Ph.D. (Princeton)
Assistant Professor of History — 1900 Glendale Avenue

†William Cary Maxwell (1930), Ph.D. (Heidelberg)
Associate Professor of German — 142 Pinecrest Road

Demmie G. Mayfield (1964), M.D. (Texas)
Assistant Professor of Psychiatry — Apartment 3-301 West Trinity Avenue

Otto Meier, Jr. (1934), Ph.D. (Pennsylvania)
Professor of Electrical Engineering — 113 Pinecrest Road

Elgin W. Mellown (1965), Ph.D. (London)
Assistant Professor of English — 1108 Minerva Avenue

Elijah Eugene Menefee, Jr. (1940), M.D. (Duke)
Professor of Medicine — 2205 Cranford Road

James L. Meriam (1963), Ph.D. (Yale)
Professor of Engineering Mechanics — 3434 Rugby Road

Richard S. Metzgar (1962), Ph.D. (Buffalo)
Associate Professor of Immunology — 3613 Westover Road

Horst Meyer (1959), Docteur ès Sciences (Geneva)
Professor of Physics — 1411 Anderson Street

M. Victor Michalak (1950), Ph.D. (Indiana)
Assistant Professor of English — 804 Louise Circle

Gustavus H. Miller (1955), Ph.D. (Michigan)
Assistant Professor of Romance Languages — Bartram Drive, Chapel Hill, N. C.

Wilma A. Minniear (1964), M.S.N. (Western Reserve)
Associate Professor of Nursing — Box 3427, Duke Hospital

Forest Mixon (1967), Ph.D. (Delaware)
Adjunct Associate Professor of Mechanical Engineering — 704 Shady Lawn Road, Chapel Hill, N. C.

D. Jurgen Moltmann (1967), Th.D. (Gottingen)
Visiting Professor of Theology — 1108 Watts Street

† Sick Leave 1967-68
* Resigned 3-31-68

Gerald C. Monsman (1965), Ph.D. (Johns Hopkins) Apartment 6
Assistant Professor of English Philip Apartments, 307 West Trinity Avenue
Donald M. Monson (1962), M.D. (Wisconsin)
Adjunct Assistant Professor of Radiology 2615 Stuart Drive
John W. Moore (1961), Ph.D. (Virginia) 605 Kenmore Road
Professor of Physiology and Professor of Biomedical Engineering Chapel Hill, N. C.
Lawrence C. Moore, Jr. (1966), Ph.D. (California Institute of Technology)
Assistant Professor of Mathematics 2402 Lednum Street, Apartment C
William Hamilton Moore (1963), Ph.D. (Harvard)
Assistant Professor of English 2802 Erwin Road
James J. Morris (1963), M.D. (State University of New York)
Assistant Professor of Medicine 2903 Buckingham Road
Montrose J. Moses (1959), Ph.D. (Columbia)
Associate Professor of Anatomy 152 Pinecrest Road
Thomas B. Mowbray (1967), M.A. (Duke)
Temporary Instructor in Botany 1208 Arnette Avenue
Earl George Mueller (1945), Ph.D. (Iowa)
Associate Professor of Art 1001 Gloria Avenue
Mrs. Julia Wilkinson Mueller (1939-41; 1946), M.A. (Iowa)
Professor of Music 1001 Gloria Avenue
Bruce Muga (1967), Ph.D. (Illinois)
Assistant Professor of Civil Engineering 1306 West Lakewood Avenue
Daniel F. Murphy (1966), Ph.D. (Rochester)
Associate in Medical Psychology in Department of Psychiatry and Lecturer in Psychology in the Department of Psychology 3019 Mossdale Avenue
Roland Murphy (1967), S.T.D. (Catholic University)
Visiting Professor of Religion York House 206
Francis J. Murray (1960), Ph.D. (Columbia)
Professor of Mathematics 1011 Homer Street
James C. Murray (1967), B.A. (Cornell)
Instructor in Romance Languages 2420 Vesson Avenue, Apt. 2
James J. Murray (1967), M.S. (Chicago)
Adjunct Associate Professor of Mechanical Engineering 809 Hudson Avenue
A. Wendell Musser (1963), M.D. (Indiana)
Associate Professor of Pathology 2810 Dogwood Road
Marc J. Musser (1966), M.D. (Wisconsin)
Professor of Medicine 2617 McDowell Street
Hiroshi Nagaya (1966), M.D. (Tokyo) Apartment F
Assistant Professor of Medicine 1003 Sherwood Drive
Toshio Narahashi (1965), Ph.D. (Tokyo)
Associate Professor of Physiology 812 Archdale Road
Thomas H. Nash, Jr. (1959), B.S.M.E. (Iowa State)
Assistant Professor of Mechanical Engineering 2527 Wrightwood Avenue
Blaine S. Nashold, Jr. (1957), M.D. (McGill)
Associate Professor of Surgery in Division of Neurosurgery 410 East Forest Hills Boulevard
Sydney H. Nathans (1966), M.A. (Johns Hopkins) 711 Greenwood Road
Instructor in History Chapel Hill, N. C.
Dorothy E. Naumann (1963), M.D. (Syracuse)
Associate in Preventive Medicine 2404 Tampa Avenue
Aubrey Willard Naylor (1952), Ph.D. (Chicago)
Professor of Botany 2430 Wrightwood Avenue

Thomas Herbert Naylor (1964), Ph.D. (Tulane)
Associate Professor of Economics — 2727 Spencer Street

*Bohdan Nechay (1966), D.V.M. (Minnesota)
Assistant Professor of Pharmacology and Assistant Professor of Experimental Urology — 1911 House Avenue

Stanley S. Needell (1965), M.D. (Virginia)
Assistant Professor of Psychiatry — 1400 Welcome Circle

Glenn Robert Negley (1946), Ph.D. (Chicago)
Professor of Philosophy — 3610 Hathaway Road

M. Wilson Nesbitt, Jr. (1957), B.D. (Duke), D.D.
Associate Professor of the Work of the Rural Church — 1609 Peace Street

Charles W. Neville, Jr. (1964), M.D. (Vanderbilt)
Assistant Professor of Psychiatry — Highland Hospital, Asheville, N. C.

Barbara Carol Newborg (1952), M.D. (Johns Hopkins)
Associate in Medicine — 1503 Virginia Avenue

Henry Winston Newson (1948), Ph.D. (Chicago)
Professor of Physics — 1111 North Gregson Street

Francis Newton (1967), Ph.D. (North Carolina)
Professor of Classical Studies — 2809 Legion Avenue

William McNeal Nicholson (1935), M.D. (Johns Hopkins)
Professor of Medicine — 824 Anderson Street

R. Bruce Nicklas (1965), Ph.D. (Columbia)
Associate Professor of Zoology — 3101 Camelot Court

Harry Stewart Nielsen (1967), Ph.D. (Ohio State)
Assistant Professor of Microbiology — 1314 Gregson Street

Nancy Nolan (1964), M.Sc. (Ohio State)
Assistant Professor of Nursing — 707 Louise Circle

Loren W. Nolte (1966), Ph.D. (Michigan)
Assistant Professor of Electrical Engineering — 4619 Blanchard Road, Parkwood

Sue Norville (1966), M.S.N. (Emory)
Assistant Professor of Nursing — 705 Louise Circle

John B. Nowlin (1967), M.D. (Duke)
Associate in Community Health Sciences — 1310 E Leon Street

Yasuhiko Nozaki (1966), Ph.D. (Tokyo)
Associate in Biochemistry — 2720 Erwin Road

Holger Olof Nygard (1960), Ph.D. (California)
Professor of English — Route 2, Cole Mill Road

John F. Oates (1967), Ph.D. (Yale)
Associate Professor of Classical Studies — 708 N. Buchanan Boulevard

Walter D. Obrist (1957), Ph.D. (Northwestern)
Professor of Medical Psychology in Department of Psychiatry and Lecturer in Psychology — 2604 McDowell Street

Guy Leary Odom (1943), M.D. (Tulane)
Professor of Neurosurgery — 2812 Chelsea Circle

William M. O'Fallon (1965), Ph.D. (Vanderbilt)
Assistant Professor of Community Health Sciences — Glen Heights, Chapel Hill, N. C.

Billy Brown Olive (1960), B.S.E.E., LL.B. (St. Johns)
Lecturer in Electrical Engineering — Box 280-2, Route 1

F. Hodge O'Neal (1959), S.J.D. (Harvard)
Professor of Law — Box 284A, Mt. Sinai Road

Henry J. Oosting (1932), Ph.D. (Minnesota)
Professor of Botany — 2642 University Drive

Edward Stewart Orgain (1934), M.D. (Virginia)
Professor of Medicine — 3321 Devon Road

* Resigned 3-1-68

Robert Tappan Osborn (1954), B.D., Ph.D. (Drew)
Associate Professor of Religion — 2732 McDowell Street

James G. Osborne (1961), B.S. (California)
Professor of Forest Biometry — 2756 McDowell Street

David W. Osgood (1967), M.A. (Duke)
Temporary Instructor in Zoology — 3605 Shannon Road

Shirley K. Osterhout (1967), M.D. (Duke)
Associate in Pediatrics — 600 Starmont Drive

Suydan Osterhout (1959), M.D. (Duke), Ph.D. (Rockefeller Institute)
Associate Professor of Microbiology and Assistant Professor of Medicine — 600 Starmont Drive

Athos Ottolenghi (1959), M.D. (Tavia)
Associate Professor of Pharmacology — 918 Green Street

Harry Ashton Owen, Jr. (1951), Ph.D. (North Carolina State)
Professor of Electrical Engineering — 2741 McDowell Street

George Padilla (1965), Ph.D. (California) — Marine Laboratory
Associate Professor of Physiology — Wilmington, N. C.

David Paletz (1967), M.A. (California)
Instructor in Political Science — 1311 Carolina Avenue

Aubrey Edwin Palmer (1944), B.S., C.E. (Virginia)
Associate Professor of Civil Engineering — 2525 Highland Avenue

Richard A. Palmer (1966), Ph.D. (Illinois)
Assistant Professor of Chemistry — 126 Pinecrest Road

Erdman B. Palmore (1967), Ph.D. (Columbia)
Associate Professor of Medical Sociology in Department of Psychiatry and Associate Professor of Sociology — 2508 Sevier Street

*Carl D. Parker (1966), M.S. (Duke)
Lecturer in Electrical Engineering — 102 Milford Lane

Harold Talbot Parker (1939), Ph.D. (Chicago)
Professor of History — 923 Dacian Avenue

Roy T. Parker (1954), M.D. (Virginia)
Professor of Obstetrics and Gynecology — 111 Pinecrest Road

Harry B. Partin (1964), Ph.D. (Chicago)
Assistant Professor of Religion — 2739 Spencer Street

Joel Francis Paschal (1954), Ph.D. (Princeton)
Professor of Law — 1527 Pinecrest Road

Merrill Lee Patrick (1964), Ph.D. (Carnegie Institute of Technology)
Assistant Professor of Mathematics — A-4 1200 Leon Street

Ransom Rathbone Patrick (1954), Ph.D. (Princeton)
Professor of Art History — 116 Pinecrest Road

Lewis Patton (1926), Ph.D. (Yale)
Professor of English — 614 Swift Avenue

Zdenek D. Pauk (1967), M.S. (Iowa)
Assistant Professor of Psychiatry — 3818 Lyckan Parkway

Hilda I. Pavlov (1960), M.A. (Leningrad)
Assistant Professor of Slavic Languages — 709 Reta Road

Michael I. Pavlov (1960), M.A. (Leningrad)
Assistant Professor of Slavic Languages — 709 Reta Road

William Bernard Peach (1951), Ph.D. (Harvard)
Professor of Philosophy — 920 Dacian Avenue

George W. Pearsall (1964), Sc.D. (Massachusetts Institute of Technology)
Professor of Mechanical Engineering — 2941 Welcome Drive

Birger A. Pearson (1966), B.D. (Pacific Lutheran Seminary)
Instructor in Religion — 222 East Markham Avenue

* From 11-15-67 through 1-31-68

Edwin F. Pearson (1967), B.A. (Yale)
Instructor in Physics — Rt. 7, Box 50

Talmage Lee Peele (1939), M.D. (Duke)
Professor of Anatomy, Associate Professor of Neurology, Assistant Professor of Pediatrics, and Lecturer in Psychology — KD2 University Apartments

Charles Henry Peete, Jr. (1953), M.D. (Harvard)
Associate Professor of Obstetrics and Gynecology — 42 Beverly Drive

William P. J. Peete (1955), M.D. (Harvard)
Professor of Surgery — 2814 Chelsea Circle

Jacques H. Perivier (1965), Ph.D. (Pennsylvania) — Four Seasons Apartments
Assistant Professor of Romance Languages — 1911 House Avenue

Harold Sanford Perry (1932), Ph.D. (Cornell)
Professor of Botany — 2302 Cranford Road

Edythe Mae Persing (1964), M.N. (Western Reserve)
Assistant Professor of Nursing — Route 2, Chapel Hill, N. C.

Elbert Lapsley Persons (1930), M.D. (Harvard)
Professor of Medicine and Associate Professor of Preventive Medicine and Public Health — 723 Anderson Street

Walter Scott Persons (1930), A.B. (Duke)
Associate Professor of Physical Education — 612 Swift Avenue

Ernst Peschel (1953), M.D. (Berlin)
Associate Professor of Medicine — 2306 Pershing Street

Robert H. Peter (1967), M.D. (Duke)
Associate in Medicine — 3821 Tremont Drive

Anton Peterlin (1961), Ph.D. (Berlin)
Adjunct Professor of Chemistry — 1212 Arnette Avenue

Ray C. Petry (1937), Ph.D. (Chicago)
James B. Duke Professor of Church History — 128 Pinecrest Road

Olan Lee Petty (1952), Ph.D. (Iowa)
Professor of Education — 2605 McDowell Street

Eric A. Pfeiffer (1966), M.D. (Washington)
Assistant Professor of Psychiatry — 3203 Cromwell Road

John Bernard Pfeiffer, Jr. (1949), M.D. (Cornell)
Associate Professor of Medicine — 3414 Rugby Road

R. W. Pfouts (1967), Ph.D. (North Carolina) — 502 Ransom Street
Visiting Professor of Economics — Chapel Hill, N. C.

Leland R. Phelps (1961), Ph.D. (Ohio State)
Professor of German — 2255 Cranford Road

James Henry Phillips (1946), Ph.D. (Yale)
Associate Professor of Religion — 2517 Perkins Road

Roberta Phillips (1965), M.S.N.E. (North Carolina)
Assistant Professor of Nursing — Colonial Apartments, 7D

Jane Philpott (1951), Ph.D. (Iowa State)
Associate Professor of Botany — 2260 Cranford Road

Kenneth LeRoy Pickrell (1944), M.D. (Johns Hopkins)
Professor of Plastic Surgery — 3 Sylvan Road

Orrin H. Pilkey (1965), Ph.D. (Florida State) — Route 3, Highway 70
Associate Professor of Geology — Hillsborough, N. C. 27278

Theo Clyde Pilkington (1961), Ph.D. (Duke)
Associate Professor of Biomedical Engineering and Associate Professor of Electrical Engineering — 2718 Spencer Street

Jacques C. Poirier (1955), Ph.D. (Chicago)
Professor of Chemistry — 210 West Lavender Street

James Polhemus (1967), M.A. (Virginia)
Visiting Instructor in Political Science — 1925 Morehead Avenue

Louis R. Pondy (1967), Ph.D. (Carnegie Institute of Technology)
Assistant Professor of Business Administration — 1013 Monmouth Avenue

F. Stanley Porter (1964), M.D. (Johns Hopkins)
Associate Professor of Pediatrics — 2609 Cornwallis Road

Richard M. Portwood (1959), M.D. (Southwestern)
Assistant Professor of Medicine and Assistant Professor of Preventive Medicine — 1720 Vista Street

Raymond W. Postlethwait (1955), M.D. (Duke)
Professor of Surgery — 1513 Pinecrest Road

William H. Poteat (1960), B.D., Ph.D. (Duke) — 621 Greenwood Road
Professor of Christianity and Culture — Chapel Hill, N. C.

Albert H. Powell, Jr. (1965), M.D. (Duke)
Associate in Psychiatry — 3429 Dover Road

Benjamin E. Powell (1946), Ph.D. (Chicago)
Professor in the Faculty of Arts and Sciences — 3609 Hathaway Road

Philip C. Pratt (1966), M.D. (Johns Hopkins)
Associate Professor of Pathology — 2707 Sevier Street

Vernon Pratt (1964), M.F.A. (San Francisco Art Institute)
Instructor in Art — 701 Cornwallis Road

Richard Lionel Predmore (1950), D.M.L. (Middlebury)
Professor of Romance Languages — 2535 Sevier Street

Jack J. Preiss (1959), Ph.D. (Michigan State)
Associate Professor of Sociology and Associate Professor of Medical Sociology in Department of Psychiatry — 2722 McDowell Street

Richard A. Preston (1965), Ph.D. (Yale)
William K. Boyd Professor of History — 1124 Woodburn Road

James Ligon Price, Jr. (1952), Ph.D. (Cantab.)
Professor of Religion — 2723 Circle Drive

Reynolds Price (1958), B.Litt. (Oxon.)
Assistant Professor of English — Box 4813 Duke Station

Jesse Harris Proctor, Jr. (1958), Ph.D. (Harvard)
Professor of Political Science — 613 Swift Avenue

Jack Hale Prost (1966), Ph.D. (Chicago)
Assistant Professor of Anatomy and Assistant Professor of Anthropology — 807 Onslow Street

A. Kenneth Pye (1966), LL.M. (Georgetown)
Professor of Law — 1200 Leon Apt. G5

Louis D. Quin (1957), Ph.D. (North Carolina)
Professor of Chemistry — 2740 McDowell Street

Galen W. Quinn (1958), D.D.S. (Tennessee)
Professor of Orthodontics — 806 East Forest Hills Boulevard

Milton Raben (1964), M.D. (Tufts)
Assistant Professor of Radiation Therapy — 2611 McDowell Street

Thomas T. Rainey (1967), Ph.D. (Illinois)
Assistant Professor of History — 1911 C House Avenue, Apt. 51

K. V. Rajagopalan (1966), Ph.D. (Madras)
Assistant Professor of Biochemistry — 1616 Ward Street

Charles W. Ralston (1954), Ph.D. (Duke)
Professor of Forest Soils — 2531 Wrightwood Avenue

Cornelius H. Ram (1967), B.S. (Springfield College)
Assistant Professor of Naval Science — 3306 Rolling Hills Road

Dale B. J. Randall (1957), Ph.D. (Pennsylvania)
Associate Professor of English — 2620 University Drive

Robert Stanley Rankin (1927), Ph.D. (Princeton)
Professor of Political Science — 1227 Vickers Avenue

Calla Ann Raynor (1962), M.A.T. (North Carolina)
Instructor in Physical Education — 858 Louise Circle

Israel Thomas Reamer (1931), Ph.D. (Maryland)
Associate in Pharmacy — 2406 West Club Boulevard

Kenneth James Reardon (1947), M.A. (Boston)
Associate Professor of English — 2511 Winton Road

John B. Reckless (1963), M.D. (Birmingham)
Assistant Professor of Psychiatry — 2437 Tryon Road

†Wallace E. Reed (1965), M.S. (Illinois)
Assistant Professor of Economics — 2508 Sevier Street

°Robert James Reeves (1930), M.D. (Baylor)
Professor of Radiology — 920 Anderson Street

Edward Leo Reilly (1967), M.D. (Seton Hall College of Medicine)
Associate in Psychiatry — 5216 Beaumont Drive

Edmund A. Reiss (1967), Ph.D. (Harvard)
Professor of English — 3106 Devon Road

Eugene M. Renkin (1963), Ph.D. (Harvard)
Professor of Pharmacology and Head of the Division of Pharmacology in Department of Physiology and Pharmacology — 2809 Legion Avenue

A. W. Renuart (1961), M.D. (Duke)
Assistant Professor of Pediatrics — 1201 Shepherd Street

Thomas D. Reynolds (1953), Ph.D. (Duke)
Associate Professor of Mathematics — 2502 Wrightwood Avenue

John McFarlane Rhoads (1956), M.D. (Temple)
Professor of Psychiatry and Lecturer of Pastoral Care in Divinity School — 2404 Prince Street

Reed P. Rice (1965), M.D. (Indiana) — 716 Kenmore Road
Assistant Professor of Radiology — Chapel Hill, N. C.

Lawrence Richardson, Jr. (1966), Ph.D. (Yale)
Professor of Latin — 1103 North Gregson Street

McMurry S. Richey (1954), B.D., Ph.D. (Duke)
Professor of Theology and Christian Nurture — 2725 Dogwood Road

Mac L. Ricketts (1965), Ph.D. (Chicago)
Visiting Assistant Professor of Religion — 3318 Dixon Road

John D. Riebel (1962), M.A. (Duke) — 60 Oakwood Drive
Assistant Professor of Physical Education — Chapel Hill, N. C.

Dana Phelps Ripley (1959), Ph.D. (North Carolina)
Assistant Professor of Romance Languages — 1303 Dollar Avenue

Joann Ritchie (1967), M.N. (Texas Woman's University)
Instructor in Nursing — 1200 Leon St., Apt. H. 8

Nathan Russell Roberson (1963), Ph.D. (Johns Hopkins)
Assistant Professor of Physics — 3406 Ogburn Court

John Henderson Roberts (1931), Ph.D. (Texas)
Professor of Mathematics — 2813 Legion Avenue

J. David Robertson (1966), M.D. (Harvard), Ph.D. (Mass. Institute of Technology)
Professor of Anatomy — 32 Oak Drive

Charles K. Robinson (1961), B.D., Ph.D. (Duke)
Associate Professor of Philosophical Theology — 126 Emerald Circle

† Leave of absence academic year 1967-68
° Deceased 2-24-68

Hugh G. Robinson (1964), Ph.D. (Duke
Associate Professor of Physics — 2749 McDowell Street

Roscoe R. Robinson (1962), M.D. (Oklahoma)
Associate Professor of Medicine — 3929 Nottaway Road

Herman Robl (1959-64; 1966), Ph.D. (Vienna)
Adjunct Professor of Physics — 2008 West Club Boulevard

Charles A. Rogers (1965), B.D. (Perkins School of Theology)
Assistant Professor of Historical Theology — 2834 Stuart Drive

*Robert Samuel Rogers (1937), Ph.D. (Princeton), F.A.A.R.
Professor of Latin — 148 Pinecrest Road

Christiane Z. Romero (1967), M.Ph. (Yale)
Visiting Assistant Professor of German — 806 Onslow Street

Theodore Ropp (1938), Ph.D. (Harvard)
Professor of History — 302 East Woodridge Drive

Carl M. Rose, Jr. (1967), Ph.D. (Chicago)
Assistant Professor of Physics — 3109 Sherbon Drive

Norman F. Ross (1937), D.D.S. (Temple)
Associate Professor of Dentistry — 2811 Chelsea Circle

Wendell F. Rosse (1966), M.D. (Chicago)
Assistant Professor of Medicine — 3553 Hamstead Court

Annette T. Rottenberg (1965), M.A. (Harvard)
Lecturer in English — 1601 Hermitage Court

Simon Rottenberg (1965), Ph.D. (Harvard)
Professor of Economics — 1601 Hermitage Court

William Leal Rowe (1963), Ph.D. (Cornell)
Associate Professor of Anthropology — 2206 University Drive

David T. Rowlands, Jr. (1966), M.D. (Pennsylvania)
Associate Professor of Pathology — 1100 Leon Street, Apt. 3

Donald Francis Roy (1950), Ph.D. (Chicago)
Associate Professor of Sociology — 604 North Gregson Street

John Jesse Rudin, II (1945), B.D., Ph.D. (Northwestern)
Associate Professor of Speech and Worship — 1640 Marion Street

Julian Meade Ruffin (1930), M.D. (Virginia)
Professor of Medicine — 816 Anderson Street

Max R. Rumelhart (1965), B.Ed. (Gonzaga), Lt. Cdr., U.S.N.
Associate Professor of Naval Science — 3527 Racine Street

Ralph Wayne Rundles (1945), M.D. (Duke), Ph.D. (Cornell)
Professor of Medicine — 132 Pinecrest Road

Jerome Ruskin (1967), M.D. (Einstein School of Medicine)
Associate in Medicine — 709 Ferris Road

David Coston Sabiston, Jr. (1964), M.D. (Johns Hopkins)
Professor of Surgery — 3309 Dixon Road

Harvey J. Sage (1964), Ph.D. (Yale)
Assistant Professor of Pathology and
Assistant Professor of Biochemistry — 30 A Valley Terrace

Stephen J. Salchenberger (1967), Ph.D. (Johns Hopkins)
Assistant Professor of Romance Languages — 1911 House Avenue, Apt. 41

Herman Salinger (1955), Ph.D. (Yale)
Professor of German — 3444 Rugby Road

Herbert A. Saltzman (1958), M.D. (Philadelphia)
Associate Professor of Medicine — 2728 McDowell Street

John Salzano (1958), Ph.D. (Iowa State)
Associate Professor of Physiology — 607 Starmont Drive

* Deceased 1-2-68

Aaron P. Sanders (1956), Ph.D. (North Carolina)
Associate Professor of Radiology and
Assistant Professor of Physiology — 2207 Elder Street

Charles Richard Sanders (1937), Ph.D. (Chicago)
Professor of English — 103 Pinecrest Road

Baxter B. Sapp, Jr. (1960), D.D.S. (Temple)
Associate in Dentistry — 3514 Rugby Road

Mrs. Eugenia Curtis Saville (1947), M.A. (Columbia)
Associate Professor of Music — 1103 Anderson Street

Lloyd Blackstone Saville (1946), Ph.D. (Columbia)
Professor of Economics — 1103 Anderson Street

Saul M. Schanberg (1967), Ph.D., M.D. (Yale)
Assistant Professor of Neurology and
Assistant Professor of Pharmacology — 2516 Sevier Street

Harold Schiffman (1963), Ph.D. (Princeton)
Associate Professor of Psychology — 3415 Hope Valley Road

*John G. Schlogl (1963), A.M. (Columbia), Lt. Col., U.S.A.F.
Professor of Air Science — 132 Radcliffe Circle

Knut Schmidt-Nielsen (1952), Ph.D. (Copenhagen)
James B. Duke Professor of Physiology — % Zoology Department
in the Department of Zoology — Zoology Dep't., Duke University

Daniel M. Schores (1965), Ph.D. (Missouri)
Assistant Professor of Church and Community — 2502 Tryon Road

David P. Schorr, Jr. (1961), M.A.T. (Duke) — 104 Laurel Hill Road
Instructor in Mathematics — Chapel Hill, N. C.

John Schwarz (1967), Ph.D. (Duke)
Instructor in English — 106 Mirecourt (West Campus)

†Carl-Christoph Schweitzer (1967), Ph.D. (Freiburg)
NATO Visiting Professor of Political Science — 814 Onslow Street

Esther Louise Schwerman (1947), Ph.D. (Northwestern)
Assistant Professor of English — 909 Lambeth Circle

Mrs. Anne Firor Scott (1961), Ph.D. (Radcliffe) — 1028 Highland Woods
Associate Professor of History — Chapel Hill, N. C

William Evans Scott (1958), Ph.D. (Yale)
Associate Professor of History — 1311 Dollar Avenue

Richard A. Scoville (1961), Ph.D. (Yale)
Assistant Professor of Mathematics — 905 Exum Street

Will Camp Sealy (1946), M.D. (Emory)
Professor of Thoracic Surgery — 2232 Cranford Road

Richard B. Searles (1965), Ph.D. (California)
Assistant Professor of Botany — 1708 Bedford Street

Hilliard Foster Seigler (1967), M.D. (North Carolina)
Assistant Professor of Surgery — 4006 King Charles Street

James Hustead Semans (1953), M.D. (Johns Hopkins)
Professor of Urology — 1415 Bivins Street

Walter E. Sewell (1965), Ph.D. (Harvard)
Adjunct Professor of Mathematics — 2243 Cranford Road

Marion L. Shepard (1967), Ph.D. (Iowa State)
Assistant Professor of Mechanical Engineering — 2911 Friendship Road

Bobby Foster Sherwood (1965), D.V.M. (Georgia)
Associate in Veterinary Medicine — 5020 Autumn Drive

* Through 11-30-67
† Through 1-31-68

Melvin G. Shimm (1953), LL.B. (Yale)
Professor of Law — 2429 Wrightwood Avenue

William Warner Shingleton (1947), M.D. (Bowman Gray)
Professor of Surgery — 3866 Somerset Drive

Barry M. Shmavonian (1958), Ph.D. (Washington)
Associate Professor of Medical Psychology in Department of Psychiatry and Lecturer in Psychology — 2744 Sevier Street

†Joseph Robert Shoenfield (1952), Ph.D. (Michigan)
Professor of Mathematics — 1700 Hillcrest Drive

Marvin J. Short (1967), M.D. (Duke)
Associate in Psychiatry — 3027 Glendale Avenue

William Derek Shows (1967), Ph.D. (Duke)
Associate in Medical Psychology and Lecturer in Department of Religion — 2819 Broad Street

R. Baird Shuman (1962), Ph.D. (Pennsylvania)
Professor of Education — 2826 Stuart Drive

James B. Sidbury (1961), M.D. (Columbia)
Professor of Pediatrics — 4044 Nottaway Road

Herbert O. Sieker (1955), M.D. (Washington)
Professor of Medicine — 204 Forestwood Drive

Bernard Silberman (1967), Ph.D. (Michigan)
Associate Professor of History — 108 Pinecrest Road

Harold R. Silberman (1962), M.D. (Washington)
Assistant Professor of Medicine — 2718 Princeton Drive

Donald Silver (1964), M.D. (Duke)
Associate Professor of Surgery — 2419 Alpine Road

George Addison Silver, III (1946), M.D. (Duke)
Associate Professor of Psychiatry — 3910 Dover Road

Ida Harper Simpson (1959-64; 1967), Ph.D. (North Carolina) — 604 Brookview
Lecturer in Sociology — Chapel Hill, N. C.

William Hays Simpson (1930), Ph.D. (Duke)
Professor of Political Science — 1406 Dollar Avenue

Leroy C. Skinner (1959), M.A. (Maryland)
Assistant Professor of Physical Education — 2018 Sunset Avenue

D. Moody Smith (1965), Ph.D. (Yale)
Associate Professor of New Testament Interpretation — Apartment 53, 1911-C House Avenue

David Alexander Smith (1962), Ph.D. (Yale)
Assistant Professor of Mathematics — 2032 West Club Boulevard

David Tillerson Smith (1930), M.D. (Johns Hopkins), Litt.D.
James B. Duke Professor of Microbiology, Professor of Community Health Sciences and Associate Professor of Medicine — 3437 Dover Road

Donald S. Smith, II (1961), M.H.A. (Minnesota) — Atlas & Elba Streets
Assistant Professor of Hospital Administration — Apartment 4

Grover C. Smith (1952), Ph.D. (Columbia)
Professor of English — 215 W. Woodridge Drive

Harmon L. Smith (1959), B.D., Ph.D. (Duke)
Assistant Professor of Christian Ethics — 601 East Markham Avenue

Joel Smith (1958), Ph.D. (Northwestern)
Professor of Sociology — 2712 Sevier Street

L. P. Smith (1967), M.S. (Massachusetts Institute of Technology)
Temporary Instructor in Mathematics — 3505 Rugby Road

† Leave of absence academic year 1967-68

Peter Smith (1959), Ph.D. (Cantab.)
Associate Professor of Chemistry — 2711 Circle Drive

Robert Sidney Smith (1932), Ph.D. (Duke)
James B. Duke Professor of Economics — 2236 Cranford Road

Wirt W. Smith (1957), M.D. (Texas)
Associate Professor of Experimental Surgery — 3301 Surrey Road

Ralph E. Snider (1960), D.D.S. (Ohio State)
Associate in Dentistry — 2417 Bruton Road

George G. Somjen (1963), M.D. (New Zealand)
Associate Professor of Physiology and Lecturer in the Department of Psychology — 606 Buchanan Boulevard

Joachim R. Sommer (1957), M.D. (Munich)
Associate Professor of Pathology — 2724 Sevier Street

Madison S. Spach (1958), M.D. (Duke)
Professor of Pediatrics — 2632 McDowell Street

Dorothy Spangler (1954), M.A. (North Carolina)
Assistant Professor of Physical Education — 2729 Brown Avenue

Bertel M. Sparks (1966), S.J.D. (Michigan)
Professor of Law — 2409 Perkins Road

Robert L. Spaulding (1965), Ph.D. (Stanford)
Associate Professor of Education — 1516 Woodburn Road

Marshall Spector (1963), Ph.D. (Johns Hopkins)
Assistant Professor of Philosophy — 4 Holmes Circle

Joseph John Spengler (1934), Ph.D. (Ohio State), D.Hu.L.
James B. Duke Professor of Economics — 2240 Cranford Road

Alexander Spock (1962), M.D. (Maryland)
Associate Professor of Pediatrics — 2414 West Club Boulevard

George H. Spooner (1965), Ph.D. (North Carolina) — 318 Severin Street
Assistant Professor of Clinical Pathology — Chapel Hill, N. C.

David R. Squire (1962), Ph.D. (Rice)
Visiting Assistant Professor of Chemistry — 3509 Westover Road

Olaf Stackelberg (1963), Ph.D. (Minnesota)
Assistant Professor of Mathematics — 1320 Clarendon Street

John Staddon (1967), Ph.D. (Harvard)
Assistant Professor of Psychology — 2719 McDowell Street

William J. Stambaugh (1961), Ph.D. (Yale)
Associate Professor of Forest Pathology — 3211 Sherbon Drive

Dennis Keith Stanley, Jr. (1961), Ph.D. (Johns Hopkins)
Assistant Professor of Greek — K3D Universtiy Apartments

James L. Stanley (1966), B.A. (Syracuse)
Associate Professor of Air Force Aerospace Studies — 5204 Newhall Road

Charles F. Starmer (1966), M.S.E.E. (Duke) — Valley Park Road
Associate in Biomathematics in the Department of Community Health Sciences — Terrace Apartment #9, Chapel Hill, N. C.

W. K. Stars (1966), M.A. (North Carolina)
Lecturer in Art — 1916 Glendale Avenue

Eugene Anson Stead, Jr. (1947), M.D. (Emory)
Florence McAlister Professor of Medicine — 2122 Campus Drive

Donald John Stedman (1963), Ph.D. (George Peabody)
Associate Professor of Medical Psychology in Department of Psychiatry and Lecturer in Psychology — 134 Chateau Road

*Robert S. Stempfel, Jr. (1958), M.D. (Vanderbilt)
Professor of Pediatrics and Associate Professor of Physiology — Box 55, Garrett Road

* Resigned 1-31-68

Lionel Stevenson (1955), Ph.D. (California), F.R.S.L.
James B. Duke Professor of English — 3106 Devon Road

Delford L. Stickel (1962), M.D. (Duke)
Associate Professor of Surgery — 3108 Devon Road

William Frank Stinespring (1936), Ph.D. (Yale)
Professor of Old Testament and Semitics — 1107 Watts Street

Donald E. Stone (1963), Ph.D. (California)
Associate Professor of Botany — 2706 Spencer Street

Virginia Stone (1966), Ph.D. (North Carolina)
Professor of Nursing — 1829 Front Street, Apt. 3A

Victor H. Strandberg (1966), Ph.D. (Brown)
Assistant Professor of English — 2709 Augusta Drive

John H. Strange (1966), Ph.D. (Princeton)
Assistant Professor of Political Science — 2307 Prince Street

Jeanette Straub (1966), M.A. (Duke)
Assistant Professor of Nursing — 2020 Pershing Street

Norbert Straumann (1967), Ph.D. (Zurich)
Visiting Associate Professor of Physics — 2741 McDowell Street

Howard A. Strobel (1948), Ph.D. (Brown)
Professor of Chemistry — 1119 Woodburn Road

John W. Strong (1966), LL.B. (Illinois)
Associate Professor of Law — 1125 Anderson Street

W. A. Stumpf (1948), Ph.D. (Chicago)
Professor of Education — 127 Pinecrest Road

Henry L. Sublett, Jr. (1962), Ed.D. (Virginia)
Associate Professor of Education — 1024 Southwood Drive

Herbert P. Sullivan (1960), Ph.D. (Durham)
Associate Professor of Religion and Lecturer in History of Religion — 504 E. Markham Avenue

John D. Sullivan (1958), Ph.D. (Michigan State)
Associate Professor of Wood Science — 2710 McDowell Street

Elizabeth Read Sunderland (1939-42; 1943), Ph.D. (Radcliffe)
Associate Professor of Art — 6416 College Station

Robert Oscar Swan (1961), Ph.D. (Pennsylvania)
Associate Professor of Hindi-Urdu — 3416 Cromwell Road

Louis Earl Swanson (1949), A.B. (Hamline)
Associate Professor of Hospital Administration — 2418 Wrightwood Avenue

Donald Swift (1967), Ph.D. (North Carolina)
Visiting Associate Professor of Geology — 2112 Broad Street, Apt. E8

Charles Tanford (1960), Ph.D. (Princeton)
Professor of Physical Biochemistry — 1101 Norwood Avenue

Dorothy Ellen Tate (1962), M.S. (Pennsylvania State)
Associate Professor of Dietetics — 923 Lambeth Circle

*Robert H. Tate (1966), B.A. (Vanderbilt)
Assistant Professor of Naval Science — 40 Parkwood Manor

Robert S. Tate, Jr. (1965), M.A. (Indiana)
Assistant Professor of Romance Languages — 2311 Prince Street

Lawrence A. Taylor, Jr. (1967), M.D. (North Carolina)
Assistant Professor of Pathology — 1207 Washington Street

John TePaske (1967), Ph.D. (Duke)
Associate Professor of History — 1313 Woodburn Road

Marcel Tétel (1960), Ph.D. (Wisconsin)
Associate Professor of Romance Languages — 2310 Prince Street

* Through 1-15-68

Ralph Edward Thiers (1960), Ph.D. (Toronto)
Professor of Biochemistry — 143 Pinecrest Road

O. Allen Thiher, Jr. (1967), M.A. (Wisconsin)
Assistant Professor of Romance Languages — 10A Colonial Apts.

Walter Lee Thomas, Jr. (1932-35; 1937-42; 1945), M.D. (Virginia)
Professor of Obstetrics and Gynecology — 3619 Dover Road

Edgar Tristram Thompson (1935), Ph.D. (Chicago)
Professor of Sociology — 138 Pinecrest Road

Edward E. M. Thompson (1967), M.D. (Liverpool)
Associate in Surgery — Apt. D1 1200 Leon Street

Howard K. Thompson (1962), M.D. (Columbia)
Assistant Professor of Medicine and
Assistant Professor of Biomathematics — 1406 Oakland Avenue

Larry W. Thompson (1961), Ph.D. (Florida State)
Associate Professor of Medical Psychology in Department of Psychiatry and Lecturer in Psychology — 3408 Hope Valley Road

Robert W. Thompson (1966), B.S. (Maryland)
Assistant Professor of Air Force Aerospace Studies — 126 Larkspur Circle

Vaida D. Thompson (1967), Ph.D. (North Carolina)
Assistant Professor of Nursing — 3408 Hope Valley Road

Fredrick L. Thurstone (1967), Ph.D. (N.C. State University)
Associate Professor of Electrical Engineering and
Associate Professor of Biomedical Engineering — 2532 Sevier Street

John K. Tice (1966), Ph.D. (North Carolina) — 7-H Town House Apts.
Visiting Assistant Professor of Philosophy — Chapel Hill, N. C.

John P. Tindall (1966), M.D. (Duke)
Assistant Professor of Dermatology — 4039 King Charles Road

George T. Tindall (1961), M.D. (Johns Hopkins)
Associate Professor of Neurosurgery — 1411 North Gregson Street

Edward A. Tiryakian (1965), Ph.D. (Harvard)
Professor of Sociology — 1523 Hermitage Court

Bert R. Titus (1961)
Assistant Professor of Orthosis and Prosthesis — 225 West Woodridge Drive

Russell F. Tomlinson (1962), Ph.D. (Florida)
Assistant Professor of Medical Psychology in Department of Psychiatry — 410 Ridgefield Road, Chapel Hill, N. C.

E. Clifford Toren, Jr. (1961), Ph.D. (Illinois) — Route 3
Assistant Professor of Chemistry — Hillsborough, N. C.

Elias Torre (1951), Doctor en Filosofía y Letras (Madrid)
Associate Professor of Romance Languages — 1121 Anderson Street

Daniel C. Tosteson (1961), M.D. (Harvard) — 209AA, Route 1, Piney Mt. Road
Professor of Physiology — Chapel Hill, N. C.

V. G. Treml (1967), Ph.D. (North Carolina) — 603 Long Leaf Drive
Associate Professor of Economics — Chapel Hill, N. C.

Philip H. Trickey (1965), M.S.E.E. (Maine)
Lecturer in Electrical Engineering — 112 West Lavender Avenue

†William G. Troyer (1965), M.D. (Oklahoma) — Walter Reed Hospital
Associate in Medicine — Washington, D. C.

James Nardin Truesdale (1930), Ph.D. (Duke)
Professor of Greek — 105 Pinecrest Road

Benjamin Trump (1965), M.D. (Kansas) — Route 1
Professor of Pathology — Box 4704, Route 2

† Leave of absence 10-24-66 through 10-23-69

Gene M. Tucker (1966), Ph.D. (Yale)
Assistant Professor of Old Testament — 2210 Arrington Street

Vance Tucker (1964), Ph.D. (California)
Associate Professor of Zoology — 412 Swift Avenue

Arlin Turner (1953), Ph.D. (Texas)
Professor of English — 1115 Woodburn Road

Mrs. Violet Horner Turner (1943), M.D. (Chicago)
Assistant Professor of Obstetrics and Gynecology — 2106 Summit Avenue

Richard Lovejoy Tuthill (1953), Ed.D. (Columbia)
Professor of Geography in the Faculty of Arts and Sciences — 2709 Dogwood Road

Malcolm P. Tyor (1955), M.D. (Duke)
Professor of Medicine — 810 East Forest Hills Boulevard

Raymond U (1967), M.S. (Northern Illinois)
Associate in Radiology — 2112 Broad Street

Luella Jane Uhrhane (1947), M.P.H. (North Carolina)
Associate Professor of Health Education — 2712 Circle Drive

Roger S. Upchurch (1967), LL.B. (Duke)
Visiting Assistant Professor of Business Administration — 2321 Englewood Avenue

William W. Van Alstyne (1964), LL.B. (Stanford)
Professor of Law — 1702 Woodburn Road

Robert van Kluyve (1962), Ph.D. (Johns Hopkins)
Assistant Professor of English — 28 Lebanon Circle

William J. Van Veen (1967), M.D. (N. J. College of Medicine and Dentistry)
Associate in Psychiatry — 3611 Randolph Road

Vartan Vartanian (1961), M.D. (Cluj)
Assistant Professor of Anesthesiology — 2109 Farthing Street

Jacinto J. Vazquez (1963), M.D. (Havana)
Professor of Pathology — 1707 Woodburn Road

Mrs. Martha Delia Vazquez (1963), M.D. (Havana)
Assistant Professor of Pathology — 1707 Woodburn Road

F. John Vernberg (1951), Ph.D. (Purdue) — Duke University Marine Laboratory
Associate Professor of Zoology — Beaufort, N. C.

John M. Vernon (1966), Ph.D. (Massachusetts Institute of Technology)
Assistant Professor of Economics — 3109 Ithaca Street

Adriaan Verwoerdt (1962), M.D. (Amsterdam)
Associate Professor of Psychiatry — Route 1, Kerley Road

Aleksandar S. Vesić (1964), D.Sc. (Belgrade)
Professor of Civil Engineering — 1722 Duke University Road

Lois Vick (1967), M.A.T. (Duke)
Lecturer in English — 2606 University Drive

Patrick R. Vincent (1954), Ph.D. (Johns Hopkins)
Associate Professor of Romance Languages — 1635 Marion Avenue

F. Stephen Vogel (1961), M.D. (Western Reserve)
Professor of Pathology — Route 2, Box 381, Durham

Steven Vogel (1966), Ph.D. (Harvard)
Assistant Professor of Zoology — 2014 Jersey Avenue

Louis D. Volpp (1967), Ph.D. (State University of Iowa)
Professor of Business Administration — 504 East Markham Avenue

Mrs. Christa von Roebel (1954), M.D. (Leipzig)
Associate in Obstetrics and Gynecology — 2303 Pershing Street

Fred M. Vukovich (1967), Ph.D. (St. Louis) — P.O. Box 12194
Adjunct Associate Professor of Forest Meteorology — Research Triangle Park

Joseph A. C. Wadsworth (1965), M.D. (Duke)
Professor of Ophthalmology — 1532 Pinecrest Road

John P. Waggoner, Jr. (1957), B.D. (Duke), B.S. in L.S. (North Carolina)
Assistant Professor in the Faculty of Arts and Sciences — 2812 Devon Road

Stephen Andrew Wainwright (1964), Ph.D. (California)
Associate Professor of Zoology — 2539 Sevier Street

Salih J. Wakil (1959), Ph.D. (Washington)
Professor of Biochemistry — 2527 Sevier Street

Andrew Grover Wallace (1963), M.D. (Duke)
Associate Professor of Medcine — 3511 Courtland Drive

*Lawrence G. Wallace (1961), LL.B. (Columbia)
Associate Professor of Law — 427 Green Street

Michael A. Wallach (1962), Ph.D. (Harvard)
Professor of Psychology — 2406 North Duke Street

Richard L. Walter (1962), Ph.D. (Notre Dame)
Associate Professor of Physics — 1614 Woodburn Road

Hsioh-Shan Wang (1965), M.B. (National Taiwan University Medical College)
Assistant Professor of Psychiatry — 607 Central Avenue, Butner, N. C.

Calvin Lucian Ward (1952), Ph.D. (Texas)
Associate Professor of Zoology — 1726 Duke University Road

Bruce W. Wardropper (1962), Ph.D. (Pennsylvania)
William H. Wannamaker Professor of Romance Languages — 3443 Rugby Road

Seth L. Warner (1955), Ph.D. (Harvard)
Professor of Mathematics — 2406 Wrightwood Avenue

Richard Lyness Watson, Jr. (1939), Ph.D. (Yale)
Professor of History — 109 Pinecrest Road

Paul D. Webster (1966), M.D. (Bowman Gray)
Assistant Professor of Medicine — 3819 Hillgrand Drive

Helmut Wegmann (1967), Ph.D. (Maine)
Visting Assistant Professor of Mathematics — 1202 North Street

Morris Weisfeld (1967), Ph.D. (Yale)
Associate Professor of Mathematics — 2100 House Avenue

Henry Weitz (1950), Ed.D. (Rutgers)
Associate Professor of Education — 2716 Circle Drive

Bruce A. Wells (1964), M.S.E.E. (Oregon State)
Associate Professor of Electrical Engineering — 2729 Montgomery Street

Richard L. Wells (1962), Ph.D. (Indiana)
Assistant Professor of Chemistry — Box 225, Route 1 Randolph Road

Paul Welsh (1948), Ph.D. (Cornell)
Professor of Philosophy — 2749 Dogwood Road

Martha L. Wertz (1960) M.S.W. (Tulane)
Assistant Professor of Psychiatric Social Work — 2717 Augusta Drive

Joel J. West (1967), M.D. (Northwestern)
Assistant Professor of Neurology and Associate in Physiology — 2216 Lafayette Street

Joseph Cable Wetherby (1947), M.A. (Wayne)
Associate Professor of English — 2604 Sevier Street

Robert Whalen (1961), M.D. (Cornell)
Associate Professor of Medicine — 2708 Augusta Drive

Robert W. Wheat (1958), Ph.D. (Washington)
Associate Professor of Microbiology, and Assistant Professor of Biochemistry — 2720 Montgomery Street

Laddie Wheeler (1967), Ph.D. (Minnesota)
Visiting Associate Professor of Psychology — 47 Lebanon Circle

* Resigned 2-29-68

Fred M. White (1959), M.F. (Duke)
Assistant Professor of Silviculture — 3323 Rolling Hills Road

Richard Alan White (1963), Ph.D. (Michigan)
Assistant Professor of Botany — 215 Fleming Drive

George D. Wilbanks (1964), M.D. (Duke)
Assistant Professor of Obstetrics and Gynecology — 3615 Dover Road

†Karl Milton Wilbur (1946), Ph.D. (Pennsylvania)
James B. Duke Professor of Zoology — 2404 Bruton Road

Robert L. Wilbur (1957), Ph.D. (Michigan)
Associate Professor of Botany — 2613 Stuart Drive

Pelham Wilder, Jr. (1949), Ph.D. (Harvard)
Professor of Chemistry and Professor of Pharmacology in Department of Physiology and Pharmacology — 2514 Wrightwood Avenue

Robert H. Wilkinson (1967), M.D. (Washington University)
Associate in Radiology — 3519 Courtland Drive

William E. Wilkinson (1967), B.S. (Davidson)
Assistant Professor of Mathematics — P.O. Box 836, Chapel Hill, N. C.

Mrs. Hilda Pope Willett (1948), Ph.D. (Duke)
Professor of Bacteriology — 901 Wakestone Court, Raleigh, N. C.

*G. Trevor Williams (1965), Sc.D. (Johns Hopkins)
Associate Professor of Mathematics and Associate Professor of Preventive Medicine — 2702 Spencer Street

George Walton Williams (1957), Ph.D. (Virginia)
Professor of English — 6 Sylvan Road

Donald S. Williamson (1966), Ph.D. (Northwestern)
Assistant Professor of Pastoral Care — 2713 Augusta Drive

William Hailey Willis (1963), Ph.D. (Yale)
Professor of Classical Studies — 1419 Dollar Avenue

Jack W. Wilson (1967), Ph.D. (Oklahoma)
Visiting Assistant Professor of Economics — Route 8, Box 157, Raleigh, N. C.

James F. Wilson (1967), Ph.D. (Ohio State)
Assistant Professor of Civil Engineering — 3523 Racine Street

Neil L. Wilson (1957), Ph.D. (Yale)
Professor of Philosophy — Route 2, Milton Road

Robert Renbert Wilson (1925), Ph.D. (Harvard), LL.D.
James B. Duke Professor of Political Science — 717 Anderson Street

‡Ruby Wilson (1959), M.S.N. (Western Reserve)
Assistant Professor of Nursing and Associate in Medicine — 3006 University Drive

Thomas G. Wilson (1959), Sc.D. (Harvard)
Professor of Electrical Engineering — 2721 Sevier Street

William P. Wilson (1961), M.D. (Duke)
Professor of Psychiatry — 1209 Virginia Avenue

W. Philip Windham (1967), M.S. (Alabama)
Lecturer in Business Administration — 40 Hayes Road, Chapel Hill, N. C.

Cliff W. Wing, Jr. (1965), Ph.D. (Tulane)
Associate Professor of Psychology — 2722 Spencer Street

Stefan S. Winkler (1966), M.D. (Tufts)
Associate in Radiology — 231 Forestwood Drive

Orval S. Wintermute (1958), B.D., Ph.D. (Johns Hopkins)
Associate Professor of Religion and Lecturer in Old Testament — 1103 North Duke Street

† Leave of absence academic years 1967-68 and 1968-69
* Leave of absence academic year 1967-68
‡ Leave of absence academic year 1967-68

Loren Ralph Withers (1949), M.S. (Juilliard)
Associate Professor of Music — 2741 Dogwood Road

Benjamin Wittels (1961), M.D. (Minnesota)
Associate Professor of Pathology — 2308 Prince Street

C. Hilburn Womble (1958), Ph.D. (Johns Hopkins)
Associate Professor of Latin — 921 Green Street

Max Atkin Woodbury (1966), Ph.D. (Michigan)
Professor of Mathematics and
Professor of Biomathematics — 4008 Bristol Road

Barnes Woodhall (1937-43; 1945), M.D. (Johns Hopkins)
Professor of Neurosurgery — 4006 Dover Road

Frank W. Woods (1958), Ph.D. (Tennessee)
Associate Professor of Forest Ecology — 1509 Pinecrest Road

Robert Hilliard Woody (1929), Ph.D. (Duke)
Professor of History — 2734 Circle Drive

Alma Lorraine Woodyard (1954), M.Ed. (North Carolina, Greensboro)
Assistant Professor of Physical Education — 880 Louise Circle

Boyd T. Worde (1958), M.D. (Tennessee)
Associate Professor of Radiology — 2512 Sevier Street

J. J. Wortman (1967), Ph.D. (Duke)
Lecturer in Electrical Engineering — 1712 Euclid Road

*Paul M. Wortman (1967), Ph.D. (Carnegie-Mellon)
Assistant Professor of Psychology — 107 Ellerbee Street

Mrs. Julia Ann Hedgepeth Wray (1955), M.F.A. (North Carolina, Greensboro)
Assistant Professor of Physical Education — 911 Carver Street

Donald Wright (1967), M.S. (Duke)
Assistant Professor of Mechanical Engineering — 1207 Alabama Avenue

James B. Wyngaarden (1956-65; 1967), M.D. (Michigan)
Hanes Professor of Medicine — 707 Morehead Avenue

Alvin J. Wyrick (1966), B.S.E.E. (Tennessee)
Associate in Radiology — Box 3223, Duke Station

David O. Yandle (1967), Ph.D. (North Carolina State)
Associate Professor of Forest Mathematics — 2400 Tampa Avenue

William P. Yohe (1958), Ph.D. (Michigan)
Professor of Economics — 2021 Dartmouth Drive

James G. Yoho (1956), Ph.D. (Michigan State)
Professor of Forest Economics — 2522 Sevier Street

Charles R. Young (1954), Ph.D. (Cornell)
Associate Professor of History — 2929 Welcome Drive

David L. Young (1966), M.D. (Texas)
Assistant Professor of Medicine — Country Club Drive

Helen Rose Young (1957), M.S. (William and Mary)
Assistant Professor of Nursing — 5400 Newhall Road

Paul Young (1956), M.A. (Illinois)
Professor in the Faculty of Arts and Sciences — 1110 Shepherd Street

W. Glenn Young, Jr. (1954), M.D. (Duke)
Professor of Surgery — 3718 Eton Road

Chester M. Zmijewski (1963), Ph.D. (Buffalo)
Associate Professor of Immunology — 3614 Westover Road

William W-K. Zung (1966), M.D. (Texas)
Assistant Professor of Psychiatry — 806 Maynard Avenue

* Through 1-31-68

Part-Time Instructors

Theodore C. Adams, M.A. *Chemistry*	1000 North Duke Street
Joseph J. Arpad, B.A. *English*	3308-D Glasson Street
Emily Vickers Barrett, M.A. *Classical Studies*	416 Smith Avenue Chapel Hill, N. C.
Richard A. Beauchamp, B.D. *Religion*	301 Swift Avenue, Apartment 7
Kirsten Beck, A.B. *Philosophy*	106 Buchanan Boulevard
Frederick Bergstone, B.M. *Music*	1307 Lehigh Court Winston-Salem, N. C.
Carolyn J. Bowman, M.A. *Romance Languages*	2723 Brown Avenue
Bruce R. Briggs, B.A. *Mathematics*	1019 Sherwood Avenue
David G. Bromley, M.A. *Sociology*	2505 Green Street
Donald B. Brooks, A.B. *Business Administration*	812 Louise Circle
Clark Cahow, Ph.D. *History*	1106 Watts Street
Beverly Moss Cheeseman, B.A. *Romance Languages*	3307-B Mordecai Street
George K. Coffin, M.S. *Civil Engineering*	921 Burch Avenue
Caren J. Collins, B.A. *Romance Languages*	3308-A Glasson Street
Barry Cooper, M.A. *Political Science*	805 Onslow Street
R. R. Entwhistle, M.A.T. *Mathematics*	3952 Deepwood Circle
C. Stephen Fenton, B.A. *Sociology*	500 Watts Street
Alice Fiola, M.A. *Romance Languages*	911 Burch Avenue
Martha R. Foy, M.A. *Romance Languages*	2839 Chapel Hill Road
Dorothy Frasure, M.A. *Romance Languages*	1815 Northgate Street
Karl C. Garrison, M.A. *Sociology*	904½ Dacian Avenue
Wallace Garthright, B.A. *Mathematics*	1941 Morehead Avenue
Jonathan S. Griffiths, A.B. *Mathematics*	2501 Pickett Road
Juergen S. Hahn, A.B. *Romance Languages*	1815 Northgate Street
Samuel L. Hall, M.A.T. *Mathematics*	2730 Circle Drive
Jackson Hill *Music*	13 Colony Apartments Chapel Hill, N. C.

Elizabeth B. Humphrey, M.A. *Romance Languages*	P.O. Box 4009 College Station
Jacqueline Sparks Ingram, B.A. *Geology*	601 Oteys Road Chapel Hill, N. C.
Wallace Kaufman, A.B., B. Litt. *English*	Route 1 Pittsboro, N. C.
Michael Keane, B.A. *Romance Languages*	2015 W. Cornwallis Road
Robert M. Koerner, M.S. *Civil Engineering*	912 Monmouth Avenue
James R. Krabill, B.S. *Mathematics*	Colonial Apartments, 43-B
Malcolm G. Lane, B.S. *Mathematics*	526 Green Street
Barry Lee Lobb *Mathematics*	Westover Park Apartments, 8 A
Theodore E. Long, B.A. *Sociology*	2219 West Club Boulevard
Joanna Looney, B.A. *Romance Languages*	808 Onslow Street, Apartment 3
Robert E. Ludt, B.S. *Chemistry*	3439-G Glasson Street
Adeline McCall, M.A. *Music*	P.O. Box 843 Chapel Hill, N. C.
Philip L. Meredith, A.B. *Chemistry*	2302 Pratt Street
Humphrey Nash, B.A. *Mathematics*	200 Atlas Street, Apartment 6
Joseph C. Nichols, A.B. *Mathematics*	2501 Pickett Road, Apartment 5
Graeme Nyberg, Ph.D. *Chemistry*	1404 Duke University Road
Charles O'Keefe, A.B. *Romance Languages*	1208 East Morreene Road
Harvey L. Paige, B.A. *Chemistry*	1700 Hillcrest Drive
William M. Penn, A.B. *Economics*	2318 Broad Street
Ruth S. Phelps, M.A. *Music*	2255 Cranford Road
Jeffrey L. Piech, B.A. *Mathematics*	824 Green Street
Dorothy Pondy, M.B.A. *Business Administration*	1013 Monmouth Avenue
Charles H. Proctor, Ph.D. *Sociology*	P.O. Box 5457 N.C. State, Raleigh, N. C.
Stephanie Prost, B.A. *Slavic Languages*	807 Onslow Avenue
Paul Clyde Ragland, Ph.D. *Geology*	7 Ridgecrest Drive Chapel Hill, N. C.
Frances S. Redding, M.M. *Music*	1109 Country Club Drive High Point, N. C.
Raymond Roy, B.S. *Chemistry*	2501 Pickett Road

Paul Scagnelli, B.S. *Psychology*	903 Shepherd Street
Daniel J. Scheuer, M.A. *Economics*	305 West Trinity Avenue
R. Ames Schroeder, B.S. *Mathematics*	8 Alastair Court
Donald S. Shannon, M.B.A. *Business Administration*	4012 Hillgrand Drive
Sonia B. Spencer, M.A. *Romance Languages*	Route 2, Little John Road Chapel Hill, N. C.
Thomas Spragens, M.A. *Political Science*	809 Lancaster Street
James R. Thompson, Jr., B.S. *Physics*	Box 69-B, Route 3
John D. Turner, B.D. *Religion*	2828 Erwin Road
Donald B. Warner, M.S.M.E. *Mechanical Engineering*	Colonial Apartments, 65-C
Peter R. Weidner, B.S. *Mathematics*	1211 Ruffin Street
William F. Wright, B.A. *Business Administration*	3322-A Glasson Street
William Wright, B.A. *Romance Languages*	P.O. Box 1165 Duke Station

Research Associates

Richard G. Absher, Ph.D. *Surgery*	3434 East Glasson Street
Luis Arqueros, Ph.D. *Biochemistry*	1909 James Street
Wolfgang Augstein, Ph.D. *Chemistry*	1935 Morehead Avenue
Henry Barrs, Ph.D. *Botany*	86 Colonial Apartments
Raymond C. Bender, Ph.D. *Surgery*	1700 Hillcrest Drive
Dani P. Bolognesi, Ph.D. *Surgery*	Box 3486 Rt. 6, Raleigh, N. C.
Mary Lee Brehm, Ph.D. *Sociology and Anthropology*	1212 Roosevelt Drive Chapel Hill, N. C.
Keith Brew, Ph.D. *Biochemistry*	3039 University Drive
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M. Alberta Thiele, A.B. *Surgery*	P.O. Box 1324 Chapel Hill, N. C.
Magdalena Tieffenberg, Lic. e.f. *Physiology and Pharmacology*	2112 Broad Street
Ian Trayer, Ph.D. *Biochemistry*	501 Dupont Drive, Apartment 1
Claus Tritschler, Ph.D. *Biochemistry*	101 Carolina Avenue
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Hamao Watanabe, Ph.D. *Chemistry*	No. 6, Carwin Apartment 2213 Elder Street

Norimitsu Watabe, Ph.D.	
Zoology	942 Lambeth Circle
Gerald Weeks, Ph.D.	
Biochemistry	1808 Knox Street
Gisbert Winnewisser, Ph.D.	
Physics	
Grace Yu, Ph.D.	
Botany	500 Dupont Drive, #39
Yuan Yu, Ph.D.	
Electrical Engineering	500 Dupont Drive, #39

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M. Bourgeois-Gavardin, M.D.	
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Clinical Associate in Medicine	Greensboro, N. C.
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Clinical Associate in Orthopaedics in Department of Surgery	3534 Rugby Road
A. Derwin Cooper, M.D.	
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Samuel Owen Cornwell, M.D.	N. C. State Board of Health
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Clinical Associate in Medicine	3808 Hillgrand Circle
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Clinical Associate in Orthopaedics in Department of Surgery	615 Swift Avenue
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Clinical Associate in Medicine	2621 Stuart Drive
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Kouns, John C., D.D.S.	Sourwood Drive
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Clinical Associate in Medicine	Burlington, N. C.
Arthur H. London, Jr., M.D.	
Assistant Clinical Professor of Pediatrics	808 Wells Street
William C. London, M.D.	
Assistant Clinical Professor of Pediatrics	2211 Wilshire Drive
Thomas D. Long, M.D.	
Clinical Associate in Medicine	Box 77, Roxboro, N. C.
Emmett S. Lupton, M.D.	1100 Olive Street
Clinical Associate in Dermatology	Greensboro, N. C.
John A. Lusk, M.D.	1018 N. Elm Street
Clinical Associate in Medicine	Greensboro, N. C.
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Clinical Associate in Ophthalmology	29 Oak Drive
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David Edmond Miller	
Clinical Associate in Medicine	2118 W. Club Boulevard
John A. Moore, M.D.	344 N. Elm Street
Clinical Associate in Medicine	Greensboro, N. C.
Hans G. Noller	Corning Electronics
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Assistant Clinical Professor of Otolaryngology	3930 Plymouth Road
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Clinical Associate in Medicine	Raleigh, N. C.
Thaddeus H. Pope, Jr., M.D.	
Clinical Associate in Otolaryngology	220 Forestwood Drive
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Clinical Professor of Urology in Department of Surgery	3950 Plymouth Road
H. Max Schiebel, M.D.	
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Nathan Schupper, D.D.S.	
Clinical Associate in Dentistry	2802 Welcome Drive
Dorothy Shearin, M.D.	602 18th Street
Clinical Associate in Pediatrics	Butner, N. C. 27509

William V. Singletary, M.D.
Clinical Associate in Medicine — 32 Beverly Drive

Allen D. Smith, M.D.
Clinical Associate in Dermatology — 4022 Bristol Road

E. Wilson Staub, M.D.
Clinical Associate in Surgery — Pinehurst Surgical Clinic, Pinehurst, N. C.

Charles Woodrow Styron, M.D.
Assistant Clinical Professor of Medicine — 615 St. Mary's Street, Raleigh, N. C.

George A. Watson, Jr., M.D.
Clinical Associate in Pediatrics — 4023 Bristol Road

Bailey Daniel Webb, M.D.
Clinical Associate in Pediatrics — 300 Swift Avenue, Apartment 14, Alastair Court

David G. Welton, M.D.
Clinical Associate in Dermatology — 1012 S. King's Drive, Charlotte, N. C.

Robert Foster Young, M.D.
Assistant Clinical Professor of Community Health Sciences — Halifax County Health Department, Halifax, N. C.

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University Librarian — 3609 Hathaway Road

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Acting Assistant Provost — 2717 Circle Drive

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Assistant Dean of Arts and Sciences — 2424 Wrightwood Avenue

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Robert Boyd Cox, A.M.
Dean of Undergraduate Men and Associate Dean of Trinity College — 2319 Club Boulevard

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Annie Leigh Broughton, M.A. *Assistant Dean of Undergraduate Instruction, The Woman's College*	1111 Roosevelt Drive Chapel Hill, N. C.
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F. Hodge O'Neal, S.J.D. *Dean of the School of Law*	Route 1, Box 284A
Anthony Harrington, LL.B. *Assistant Dean of the School of Law*	611 Maplewood Avenue

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Blanche D. Smith, A.B. *Assistant to the Director, Office of Appointments*	110 Woodridge Drive

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Office of the University Editor

Betty E. McGuire, M.A.
University Editor — 14-B Colonial Apartments

John A. Furlow, B.A.
Art Director — 3607 Wateredge Drive

Murphy Alexander, M.A. — I-4 Brookside Apartments
Assistant University Editor — Chapel Hill, N. C.

Lani Lenz, B.F.A.
Design and Production Artist — Box 177, Route 7

Jon Phelps, B.A.
Staff Writer — 4116 Old Chapel Hill Road

Regional Programs

Everett H. Hopkins, A.M., LL.D.
Vice President for Regional Programs — 2016 Campus Drive

Robert Merle Colver, Ed.D.
Assistant to the Vice President for Regional Programs — 2720 Circle Drive

Student Affairs

William J. Griffith, A.B.
Assistant Dean of Arts and Sciences, Assistant to the Provost in the Area of Student Affairs — 2518 Wrightwood Avenue

Douglas R. Jensen, B.S.
Director of the Student Union and Coordinator of Student Activities — 501 Everett Place

Paul Robey Bryan, Ph.D.
Conductor of the Bands — 1108 Watts Street

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Robert Lawson, B.B.A., M.A. *Chaplain to Catholic Students*	810 West Chapel Hill Street
H. Bruce Shepherd, Jr., A.B. *Chaplain to Episcopal Students*	1110 Arnette Avenue
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Assistant — 1013 Buchanan Boulevard

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Undergraduate Instruction

Table of Contents

General Information 1
The University 1
The Undergraduate Colleges 1
The Objectives of a Liberal Education 2

Courses of Study and Requirements for Degrees 5
Trinity College and The Woman's College 5
General Program 5
Specialized Programs 10
School of Engineering 16

Special and Cooperative Programs 23
Reserve Officers Training Corps 23
Advanced Placement Program 26
Study Abroad 27
Reciprocal Agreement with UNC 29

Resources for Study 30
Faculty 30
University Libraries 30
Laboratories 31

Admission 32

Financial Information 35
Fees and Expenses 35
Student Aid 38
Prizes and Awards 43

University Registrations and Regulations 47
Registrations 47
Academic Regulations 48

Courses of Instruction 57

General Information

The University

Duke, a privately supported, church-related (Methodist) university, has about 7,800 students enrolled in nine schools and colleges. The students annually represent nearly every state and sixty-five foreign countries. There are now more than 40,000 alumni in seventy nations. The University is a member of the Southern Association of Colleges and Schools, and of the Association of American Universities, which consists of forty-one outstanding institutions.

The Undergraduate Colleges

Trinity College

Trinity College is responsible for the academic and social affairs of Duke undergraduate men in the arts and sciences. Its program is built around the development of a challenging, liberal curriculum, of honors work for able students, and effective academic counseling services. Cultural-intellectual cocurricular programs and a residential program combining faculty association with self-government are also a part of Trinity. While Trinity shares the Faculty of Arts and Sciences with The Woman's

College and the Graduate School, twenty faculty members serve as Fellows of the College.

The Woman's College

The Woman's College combines the benefits of a small residential liberal arts college with those of a major university. As members of the residential College, students govern themselves and live within a twelve-unit house system on a well-defined portion of the larger campus. The residents of each house represent all four college classes, diverse geographical origins, and varying skills and intellectual interests. Many classes and most of the College activities center on The Woman's College (East) Campus; but women students share in a wide variety of academic, cultural, and social activities on the West (Men's) Campus. A shuttle bus between campuses assures accessibility to all points.

School of Engineering

The undergraduate program is designed to provide the opportunity for students to prepare for successful practice of the profession, for continuing personal cultural development, and for satisfying and responsible citizenship. Curricula are soundly based upon mathematics and the physical sciences; yet the engineering student also selects a number of courses in the liberal arts and is a member of a community with a liberal arts tradition. As a matter of policy, the School is relatively small, with an undergraduate enrollment of about 450. The undergraduate program receives the benefits of association with a strong graduate engineering program of instruction and research.

School of Nursing

The program of undergraduate study in nursing offers an opportunity for selected high school graduates to earn the professional degree Bachelor of Science in Nursing. The objectives of the curriculum are: (1) to provide opportunities for gaining the basic knowledge, skills, and attitudes of the developing professional nurse; (2) to provide the foundations for continuing learning and study; and (3) to provide students with information which can equip them to function both as nurses and as citizens in a changing society. As a part of the University community, the School of Nursing serves its students as the focus of a total educational experience that only a major university can provide.

The Objectives of a Liberal Education

Woodrow Wilson described the objectives of a liberal education as "the wholly awakened man." Though the four years in college may not

seem long enough to achieve this noble ideal, at the least they prepare one for the life-long awakening. A bachelor's degree is not an end, it is a beginning. Graduation, from the Latin word *gradum*, step, marks one more stride along the way.

The idea of a liberal education, like all great ideas, eludes precise definition, but in every age men have tried to express this abstraction by describing its results. They have always fallen short, because any definition is a system of limitations. For example, a nineteenth-century master at Eton told his students:

> You go to a great school not so much for knowledge as for arts and habits; for the habit of attention, for the art of expression, for the art of assuming at a moment's notice a new intellectual position, for the art of entering quickly into another person's thoughts, for the habit of submitting to censure and refutation, for the art of indicating assent or dissent in graduated terms, for the habit of regarding minute points of accuracy, for the art of working out what is possible in a given time, for taste, for discrimination, for mental courage and mental soberness.
>
> —William Johnson Cory

This is helpful, but the questing student will surely wish for something further, something even more explicit about the abilities, attitudes, and customs essential to a liberal education.

At Duke University, as at every school dedicated to the liberal tradition, it is the faculty that must, in the final analysis, determine the specific content of the four-year curriculum offered for those who pursue a liberal education. And in constructing that curriculum, the faculty have taken into account these aims:

First, an educated man will acquire at least some experience in the three divisions of human knowledge and inquiry:

> the world of nature—the physical and life sciences;
> the world of man in relation to man—the social sciences;
> the world of spirit and imagination—the humanities.

The objective is a man capable of thinking in the markedly different ways represented by these three divisions; for each of them he will familiarize himself with the appropriate method and idiom as well as the particular purpose and scope.

Second, an educated man will concentrate in one discipline to enjoy the returns to be derived from intensive and specialized work.

Third, an educated man will learn to read his native language with ease and accuracy; what is more, he should develop a life-long desire to read avidly and with discernment.

Fourth, an educated man will master his native language with sufficient skill to write it with vigor and precision.

Fifth, an educated man will read, write, and speak competently at least one foreign language. Apart from any utilitarian purpose it may serve, this objective leads to an understanding of a foreign culture and at the same time affords a fresh awareness of one's own tongue and society.

And finally, a liberally educated man will acquire historical, artistic, philosophical, and spiritual perspective. An exposure to the deeds and dreams of great minds in the unending struggle to reconcile power and principle, an awareness of the ways in which men have defined beauty, a knowledge of the best in ancient thought, and an appreciation of the values men have found in the Judaeo-Christian heritage must instill a contempt for the meretricious and the second-rate.

In short, a liberal education should help a man to know, to understand, to decide, and to express: to know the facts or how to find them, to understand those facts with insight and perspective, to decide only after understanding and conscious evaluation, and to express those decisions with ease and grace. These are not the sum of a liberal education, but they go far to assist the wholly awakened man in his unceasing quest to live with dignity and sensitivity in our complex world and to participate in the values and common purposes that infuse our civilization.



Courses of Study and Requirements for Degrees

Within the framework of the four-year curricula offered in the undergraduate colleges of Duke University, the student has the major responsibility for devising and carrying through a course program appropriate to his goals and background. He will be assisted in this task by departmental Directors of Undergraduate Studies, Supervisors of Freshmen Instruction, Faculty Advisers, and by an academic dean of his college.

Duke University offers in Trinity College and The Woman's College, courses of study which lead to the degrees of Bachelor of Arts and Bachelor of Science; and in the School of Engineering, the degree of Bachelor of Science in Engineering.

Trinity College and The Woman's College

General Program

The General Program is designed for the student whose primary interest is in one of the liberal arts subjects. The subjects in which major work is offered are accounting, anthropology, art, botany, business administration, chemistry, economics, elementary education, English, French, geology, German, Greek, history, Latin, mathematics, music,

philosophy, physical education for women, physics, political science, psychology, religion, Russian, sociology, Spanish, and zoology.

Bachelor of Arts

The requirements for the degree of Bachelor of Arts are based on the principle that the student will derive the maximum benefit from his college work if his program includes a broad distribution of studies among representative fields of culture and a concentration within a special area.

For graduation with the degree of Bachelor of Arts, the following course work, or equivalent, must be completed in accordance with the academic regulations as stated in this *Bulletin*. One or more of the requirements may be met through the Advanced Placement Program.

Uniform Course Requirements	*s.h.*
English	6
Foreign Language	6–18
Natural Science	8
Formal Science	3
Religion	6
Social Science and History	12
Humanities	12
Physical Education	4
Major and Related Work	42
Electives to Make a Total of	124

These requirements are described in detail below.

English. 6 s.h. This requirement is met by the completion of English 1-2.

Foreign Language. The languages which meet this requirement are French, German, Greek, Latin, Russian, and Spanish. This requirement is fulfilled by one of the following: (1) a passing grade in French 64, German 92 or equivalent, Greek 106 or 108, Latin 64, Russian 64 or Spanish 64; (2) a satisfactory score on the C.E.E.B. Achievement Test or on the placement test given at Duke, plus a validating year (two literature courses numbered 90 or above); and (3) passing a proficiency examination. (The proficiency examination can be taken only by students who have been enrolled in language work in the University and is not available to entering Freshmen.) Students presenting for entrance four units of Latin may satisfy the language requirements by the completion of two years of Greek.

Natural Science. 8 s.h. To satisfy this requirement a student must complete a laboratory course in one of the natural sciences (biology, chemistry, geology, or physics).

Formal Science. 3 s.h. One course of at least 3 semester hours selected from mathematics (except Mathematics 51) and logic (Philosophy 48).

Religion. 6 s.h. This requirement may be met in one of the following ways: (1) by completing, in the freshman year, Religion 1-2; (2) by completing, in the sophomore year or later, Religion 51-52; or (3) by completing, in the sophomore year or later, Religion 55 and one other course selected from those numbered 60-99; or (4) by completing Religion 105, followed by 111, 121, 123, 152, or 175.

Social Science and History. 12 s.h. To satisfy this requirement a student must complete 12 semester hours, with six hours in each of two departments, from the following basic courses: Economics 1-2 or 51-52, 132, 149, 150, 154; History 1-2 or 51-52; Political Science 11 or 61 to be followed by any Political Science course with a 100 number; Psychology 91, to be followed by either Psychology 100 or 101; or Sociology 91 to be followed by any Sociology course numbered below 190 or Anthropology 93-94. (Double-numbered courses separated by a hyphen do not meet this requirement unless both courses are completed.)

Humanities. 12 s.h. To satisfy this requirement a student must complete 12 semester hours from the following courses, with six hours in each of two divisions: (Double–numbered courses separated by a hyphen do not meet this requirement unless both courses are completed.)

1. Literature: English 55-56, 57-58, 111-112, 125-126, 131-132, 137-138, 143-144; Classical Studies 111-112, 121-122; all foreign language literature courses above 100 not given in translation.
2. Philosophy 41-42, 93-94, 101, 109, 110, 111, 117, 119.
3. Art and Music: Art 51-52; Music 1-2, 51-52, 125, followed by 134, 139, 163, 164 or 165; Classical Studies 141-142.

Physical Education. 4 s.h. Physical education is required during each of the first two years and is normally completed by the end of the sophomore year.

Major and Related Work. 42 s.h. The major work consists of 18 to 24 semester hours in one department above the introductory courses. Introductory courses consist of two one-semester courses in all departments except the departments of Economics, Classical Studies, German, Music, and Romance Languages in which the introductory courses may consist of three to six one-semester courses. The choice of courses must be approved by the major department. Whenever the department defines the major as 24 hours above the introductory courses, the student, with the prior approval of the Director of Undergraduate Studies, may substitute 6 hours of advanced work normally taken by a major in a related discipline during his junior or senior year. Eighteen hours of related work must be taken in two or more other departments and is selected subject to the approval of the major department and academic dean of the appropriate college; it may not include more that one course of 6 or 8 semester hours open primarily to freshmen. With the consent of the department, however, majors in mathematics, the natural sciences,

and science education may include as related work introductory courses in mathematics and the natural sciences. Although courses satisfying the uniform course requirements may also be counted toward the requirements in major and related work, no student may satisfy two uniform course requirements with the same course.

Electives. In addition to the uniform courses required and the major and related work, other courses must be completed to make a total of at least 124 semester hours.

Students whose courses of study permit may elect a maximum of 18 semester hours in engineering, forestry, or medical science. The courses elected in these subjects must be approved by the major department and the Dean of the appropriate college.

Bachelor of Science

For graduation with the degree of Bachelor of Science, the following course work, or equivalent, must be completed in accordance with the academic regulations as stated in this *Bulletin*. One or more of the requirements may be met through the Advanced Placement Program.

Uniform Course Requirements	*s.h.*
English	6
Foreign Language	8–24
Mathematics	6
Natural Science	8
Social Science and History	6
Religion	6
Humanities	6
Physical Education	4
Major and Related Work	48
Electives to Make a Total of	124

These requirements are described below.

English. 6 s.h. This requirement is met by the completion of English 1-2.

Foreign Language. Bachelor of Science candidates must complete the second college year, or equivalent as determined by examination, of one foreign language, and the first college year of another. For each departmental major, see a listing of the foreign languages acceptable for the B.S. degree.

Mathematics. 6 s.h. This requirement may be met by completion of Mathematics 21 and 22.

Natural Science. 8 s.h. This requirement can be satisfied by courses in one of the natural sciences, namely, biology, chemistry, geology, or physics. The courses must include laboratory work.

Social Sciences and History. 6 s.h. This requirement can be satisfied by

the following: Economics 51-52, 132, 149, 150, 154; History 1-2 or 51-52; Political Science 11 or 61 to be followed by any Political Science course with a 100 number; Psychology 91, to be followed by either Psychology 100 or 101; Sociology 91 to be followed by any Sociology course numbered below 190 or Anthropology 93-94. (Double-numbered courses separated by a hyphen do not meet this requirement unless both courses are completed.)

Religion. 6 s.h. This requirement may be met in one of the following ways: (1) by completing, in the freshman year, Religion 1-2; (2) by completing, in the sophomore year or later, Religion 51-52; (3) by completing, in the sophomore year or later, Religion 55 and one other course selected from those numbered 60-99; and (4) by completing Religion 105, followed by 111, 121, 123, 152 or 175.

Humanities. 6 s.h. This requirement can be satisfied by 6 hours from the following: English 55-56, 57-58, 111-112, 125-126, 131-132, 137-138, 143-144; Classical Studies 111-112, 121-122; all foreign languages literature courses above 100 not given in translation; Philosophy 41-42, 93-94, 101, 109, 110, 111, 117, 119; Art 51-52; Music, 1-2, 51-52, 125, followed by 134, 139, 163, 164 or 165; Classical Studies 141, 142. (Double-numbered courses separated by a hyphen do not meet this requirement unless both courses are completed.)

Physical Education. 4 s.h. Physical education is required during each of the first two years and is normally completed by the end of the sophomore year.

Major and Related Work. 48 s.h. Major and related work consists of at least 48 semester hours in the natural sciences. This work must be selected from the departments of botany, chemistry, geology, mathematics, physics, psychology, and zoology. The major work consists of a minimum of 18 semester hours in one department above the introductory courses. The choice of courses is subject to the approval of the department. Whenever the department defines the major as 24 hours or more above the introductory courses, the student, with the prior approval of the Director of Undergraduate Studies, may substitute 6 hours of advanced work normally taken by a major in a related discipline during his junior or senior year. The related work is taken in at least two other departments and is selected subject to the approval of the major department. With the consent of the department, majors in mathematics and the natural sciences may include as related work introductory courses in mathematics, the natural sciences, and science education. A minimum of 14 semester hours of related work is required, 8 hours of which must be in laboratory science. Although courses fulfilling the uniform course requirements may also be counted toward the requirements in major and related work, no student may satisfy two uniform course requirements with the same course. For the major in science education leading to the B.S. degree, see p. 13.

Electives. In addition to the above, the student must elect a sufficient

number of courses to complete the 124 semester hours necessary for graduation.

Students whose courses of study permit may elect a maximum of 18 semester hours in engineering, forestry, or medical science. The courses elected in these subjects must be approved by the major department and the Dean of the college.

Specialized Programs

A student who has chosen a particular field may wish to take more course work in a major or related discipline than is required by his major department. The following programs of study offer a guide in planning this work, especially as it applies to preparation for various professions or professional schools.

Undergraduate Programs

Accounting. A student may specialize in public or industrial accounting in his junior and senior years. In either case the following courses should be taken in the freshman and sophomore years:

Freshman Year

Mathematics 17 or 21 (preferably Mathematics 21), Economics 1

Sophomore Year

Economics 51 (if Economics 1 not taken in freshman year) and Economics 52. Bus. Adm. 57-58, 101 and 138.

Public Accounting. The following sequence of courses includes more than the requirement for a major in accounting. It is, however, a suggested list of courses which meet the current requirements of the North Carolina Board of Certified Public Accountants.

Junior Year

Bus. Adm. 143—Corporation Finace
Bus. Adm. 171—Accounting Theory
Bus. Adm. 172—Corporate Accounts
Bus. Adm. 181—Business Law
Bus. Adm. 182—Business Law

Senior Year

Bus. Adm. 173, 174—Auditing Theory and Practice
Bus. Adm. 177—Income Tax Accounting
Bus. Adm. 275, 276—Advanced Industrial Accounting and Management
Bus. Adm. 295—Advanced Accounting Seminar

Election of one of the following: (either year)

Bus. Adm. 149—Marketing
Bus. Adm. 184—Commercial Law for Accountants
Bus. Adm. 185—Business Administrative Organization
Bus. Adm. 296—Advanced Accounting Seminar

Industrial Accounting. The following courses are suggested:

Junior Year

Bus. Adm. 143—Corporation Finance
Bus. Adm. 171—Accounting Theory
Bus. Adm. 172—Corporate Accounts
Bus. Adm. 177—Income Tax Accounting

Senior Year

Bus. Adm. 173—Auditing, Theory and Practice
Bus. Adm. 177—Income Tax Accounting
Bus. Adm. 275, 276—Advanced Industrial Accounting and Management
Bus. Adm. 279—Budgeting and Control
Bus. Adm. 291—Business Policy

Biology—Interdisciplinary Programs. Modern biology meets and joins forces with many related fields. Examples of such interdisciplinary areas are: biomathematics, microbiology, molecular biology, oceanography, and psychobiology. Proper training for these and other areas may require work in two or several science disciplines to such depth that requirements for a conventional uni-departmental major program cannot be met in the allotted time. Any undergraduate who contemplates undertaking a graduate program in an interdisciplinary area involving biology should consult with the directors of undergraduate study of the fields concerned. They may, by joint consent, approve of major-related programs which differ from those concerned primarily with a single discipline. An interdisciplinary major student shall be considered a major in the department of his choice and be under the supervision of the Director of Undergraduate Studies of that department. Interdisciplinary programs must be planned early in the undergraduate career, preferably starting with the freshman year.

Business. A specialized program is offered to students planning to enter business. A student electing this program must take, in addition to the uniform course requirements, the following courses in the sequence indicated.

Freshman Year

Mathematics 17 or 21 (preferably Mathematics 21) Economics 1

Sophomore Year

Economics 51 (if Economics 1 not taken in Freshman year) and Economics 52

Business Administration 57, 58, 101 and 138

Junior Year

Bus. Adm. 143—Corporate Finance

Bus. Adm. 149—Marketing

Bus. Adm. 185—Business Administrative Organization

Senior Year

Bus. Adm. 291—Business Policy

Music Education. The following course sequence is designed for prospective teachers of high school instrumental or vocal music. Although it includes more than the number of hours required for a major in music, it represents those courses recommended by the Music Department for state certification: Music 51-52, 65-66, 115-116, 121-122, 161-162, 3 additional semester hours in Music Literature, and 18 semester hours in Applied Music.

Other areas of concentration in music are described in the course listings under music in this *Bulletin.*

Teaching. Duke University is accredited by the National Council for Accreditation of Teacher Education for the preparation of elementary and secondary school teachers. The University's programs are also approved by the North Carolina Department of Public Instruction.

The program for students who intend to teach is designed to prepare for positions either in elementary or secondary schools. All prospective teachers must take Psychology 91, preferably during the sophomore year, and Education 100 or 113, preferably during the junior year. Only students with an average of 2.0 overall and in their major or teaching fields will be admitted to student teaching. Special methods courses should be taken prior to undergraduate student teaching, which may be done *only* in the senior year.

Whatever their majors, students should consult an appropriate member of the Department of Education prior to each registration period to assure their meeting the certification requirements of the states in which they wish to teach and having places reserved for them in student teaching.

Elementary-School Teaching. Students preparing to teach in the elementary school must complete the following specific requirements in addition to Psychology 91 and Education 100 or 113: Education 101, 102, 105, 106, 107, 108, 118, and 161; Art 51-52; Economics 115 or 120; Health Education 134; History 91, 92; Mathematics 17 or 21; Music 151, 152; Physical Education 102; Political Science 61; and a biological science, 3 s.h. (Biology 1-2 will satisfy this requirement and minimum uniform

requirements in natural science as well. Other courses listed above also may meet certain of the other minimum uniform requirements.) Students preparing to teach in the elementary school also must develop a nine to twenty-one semester-hour field of concentration in addition to the foregoing requirements.

Secondary-School Teaching. Students preparing to teach in a secondary school may meet certification requirements by qualifying in one teaching field. Prospective secondary-school tearchers must major in a subject other than education. Qualification for certification to teach a single science may be sought under either the A.B. or the B.S. degree. Students desiring to major in Science Education should read carefully the description of that program given below.

Science Education Major. Students who intend to teach sciences in the high school may major in Science Education. The program is designed to meet certification requirements and to provide the broad background of preparation in the sciences which is needed by science teachers. Students planning to enter this program should consult an adviser in the Department of Education and in one of the science departments. The basic requirements are: Education 100, or 113, 118, 215, 216, and 276 or 246; Mathematics 21 and 22; Sciences (botany, chemistry, geology, physics, zoology, and mathematics courses numbered above 22), 42 s.h., of which 15 must be above introductory level and must include one year's study in laboratory courses in three of the following: botany or zoology, chemistry, physics, and geology.

The same major program may be followed for both the B.S. and B.A. degrees.

Preparation for Graduate and Professional Schools

Many graduate and professional schools require special tests for students seeking admission. Information regarding the test requirements should be obtained from the catalogue of the schools to which the student plans to apply. The University Counseling Service has available applications for required graduate and professional testing programs.

Graduate School. The student who plans to enter a graduate school of arts and sciences for advanced study should consult an adviser in the field of the proposed advanced study concerning suitable preparation. Most graduate schools have definite requirements in foreign languages for all students. Candidates for the degree of Doctor of Philosophy are required to pass reading examinations, usually in German and French. In some cases other languages may be substituted. As soon as practicable, the student should ascertain the requirements of the particular graduate school he desires to enter.

Graduate School of Business Administration. Students seeking advice concerning preparation for entrance to a graduate school of business ad-

ministration may consult the Department of Business Administration. Many graduate programs in business administration are designed specifically for students with little or no undergraduate work in business.

Some schools require at least one year of calculus for admission. Additional mathematics can be very helpful, especially linear algebra, probability, statistics, and additional calculus. Other areas in which work can be of special value are: philosophy of science and formal logic; one or more of behavioral sciences, economics, and the physical sciences and engineering.

Medical and Dental Schools. Students planning to enter a medical or dental school should arrange their programs of study from the first semester so as to include those courses required by the professional schools of their choice. These courses usually include two years of English, two years of chemistry, and one year each of biology, mathematics, and physics. At Duke University the courses normally taken are English 1-2 and 55-56 or 57-58, Chemistry 1, 2, 61, 151, and 152, Biology 1 and 2, Mathematics 21-22, and Physics 41-42. Most professional schools require ninety semester hours of college credit before consideration for admission. Because individual medical and dental schools strongly recommend or, in some cases require specific courses in addition to those listed above, it is wise for the student to be fully aware of any additional requirements established by the professional school of his choice.

The minimum uniform course requirements and those of the major and its related work for either the A.B. or B.S. degree must be fulfilled for graduation. The latter requirements are described for each department under Courses of Instruction in this *Bulletin*. Each student may elect to major in the department of his choice, but should understand that even with careful program planning starting his first semester, it may be necessary to exceed the 124 semester hours required for graduation.

Law Schools. Students who plan to prepare for law school may select their major work in any field. They have often chosen the following courses:

Business Administration 57, 58.
Economics 51, 52.
English 55, 56.
History 1, 2 or 51, 52, 105, 106.
Philosophy 48 and 41.
Political Science 61.
Sociology 91, 92.

For a fuller discussion of undergraduate preparation for the study of law, refer to the bulletin of Duke University entitled "Studying Law at Duke," obtainable at the Law School.

Theological Schools and Religious Work

The Divinity School of Duke University publishes as its own the official

policy statement of the American Association of Theological Schools respecting undergraduate preparation for students expecting to enroll in graduate professional theological studies.

"The student contemplating theological study should correspond at the very earliest opportunity with the school or schools to which he intends to apply and with the authorities of his church in order to learn what will best prepare him for the specific program he expects to enter. He will be likely to find under the guidance of the seminary that he should consider the following subjects:

"English language and literature; history, including non-Western cultures as well as European and American; philosophy, particularly its history and its methods; natural sciences, both the physical and the life sciences; social sciences, where psychology, sociology, and anthropology are particularly appropriate; the fine arts and music, especially for their creative and symbolic values; Biblical and modern languages; religion, both in the Judaeo-Christian and in the Near and Far Eastern traditions.

"Some seminaries require Greek or Hebrew for admission, and many advanced biblical courses are offered in the original tongues; modern languages have a less direct but immensely educative role and are required at the graduate studies level.

"It is the understanding gained in these fields rather than the total of credits or semester-hours which is significant.

"In many seminaries students who have been well prepared in religion and equipped with the tools of theological study will be set free, not to complete their theological course more quickly, but rather to pursue more advanced studies. The principle constantly to be kept in mind is not that of satisfying paper regulations and minimum requirements, but of making the most of opportunities for education."

Professional Combination Courses

The provision whereby a senior may elect the work of the first year in a professional school of the University shall apply solely to eligible students in Trinity College or the Woman's College. The privilege of completing a combined course for the degree is conditioned upon admission to the professional school at the close of the junior year. A student thus admitted registers as a senior in college and as a first-year student in the professional school.

Forestry. Preprofessional training in forestry is offered to students of Trinity College who are planning careers in professional forestry. A student who has completed a three-year program of studies in liberal arts and sciences and who has maintained a satisfactory academic record may, with the approval of the Deans of Trinity College and the School of Forestry, respectively, transfer to the School of Forestry. Upon the satisfactory completion of the forestry courses ordinarily required in the first

year in the School of Forestry (see *Bulletin of the School of Forestry*), the student will be eligible for the degree of Bachelor of Science from Trinity College, Duke University.

The professional degree of Master of Forestry may be earned upon satisfactory completion of three additional semesters in the School of Forestry.

Trinity College students interested in this combined course are encouraged to consult with the Dean of the School of Forestry.

Law. A student who has completed, with an average grade of C, 96 semester hours of undergraduate work, including the uniform course requirements for the degree of Bachelor of Arts and the work of the junior year in his major and related fields, may, with the approval of the dean of the college, transfer to the Duke University School of Law and be eligible for the degree of Bachelor of Arts from Duke University upon the satisfactory completion therein of the work of the first year. However, study in the Law Combination Program is contingent upon admission to the Duke University School of Law, which requires a somewhat higher standard of undergraduate academic achievement for such applicants than for those who have received a baccalaureate degree prior to beginning the study of law.

It is understood that this program shall apply solely to eligible undergraduates who have completed three years in residence in Duke University, and that not less than the full first-year's work of the Law School will be acceptable for credit towards the bachelor degree.

School of Engineering

Bachelor of Science in Engineering

The School of Engineering offers a four-year program leading to the degree of Bachelor of Science in Engineering (B.S.E.), with opportunity for majors in the professional fields of civil, electrical, or mechanical engineering, as well as for programs in selected interdisciplinary fields such as bio-medical engineering, engineering mechanics, energy conversion, materials, systems and controls, and the like.

For graduation with a bachelor's degree in engineering, a minimum of 134* semester hours of course work must be completed, including the following:

* *Reserve Officers Training Programs.* A maximum of 6 hours of junior or senior level Air Science or Naval Science course work may be counted in satisfying the minimum requirements of 134 hours for a baccalaureate degree in engineering. These 6 hours may not be substituted for any of the above requirements in English, Social Sciences and History, Humanities, or electives in Social Sciences, History, and Humanities. All other credits earned in Air Science or Naval Science are taken in addition to the minimum program.

English. 6 s.h. This requirement is met by the completion of English 1-2.

Mathematics. 15 s.h. This requirement is met by completion of Mathematics 21, 22, 51, 63, and 111.

Natural Science. 16 s.h. This requirement is met by completion of Chemistry 1 and 2 and Physics 51 and 52.

Social Sciences and History. 6 s.h. This requirement may be satisfied by one of the following 6-hour sequences; Economics 1-2, or 51-52; History 1-2, or 51-52; Political Science 11 or 61; Psychology 91, to be followed by either Psychology 100 or 101; Sociology 91 and another 3 s.h. sociology course, or Anthropology 93-94.



Humanities. 6 s.h. This requirement may be satisfied by 6 hours from the following: English 55-56, 57-58; Greek 121, 122; Latin 111, 112; all foreign language literature courses above 100 not given in translation; Philosophy 41-42, 93-94; Art 1-2, 51-52; Music 1-2, 51-52; Religion 1-2 or 51-52, 55, courses numbered 60-99.

Electives in Social Science, History, and Humanities. 6 s.h. In addition to the above, the student must elect a minimum of 6 semester hours of courses in social sciences, history, or humanities.

Physical Education. 4 s.h. Physical education is required during each of the first two years and is normally completed by the end of the sophomore year.

Departmental or Major Specifications. 40 s.h. In addition to the above requirements, 40 hours of courses in the third and fourth year are specified by the engineering department or interdepartmental major in which the student is registered. A minimum of 16 hours of the 40 must be engineering courses of which 6 hours must be design-oriented studies.

Engineering Core Courses. 35 s.h. The normal engineering program includes 35 hours of engineering core courses and is met by completion of Engineering 1, 2, 23, 53, 63, 73, 83, 101, 113, 123, 133, 143, 163. Under special circumstances, a minimum of 10 hours of the normally required 16 hours of common-core engineering courses from the third- and fourth-year programs may be approved.

To provide the engineering student with the necessary background in fundamentals upon which a variety of engineering programs of study can be based, and to relieve him of the necessity of committing himself immediately to a specific major branch of engineering, a common core of courses is provided for the freshman, sophomore, and part of the junior years.

Program of Studies for the Degree of Bachelor of Science in Engineering

Freshman Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Chem 1—Gen. Inorg. Chemistry	4	Chem 2—Gen. Inorg. Chemistry	4
Egr 1—Engineering Design I	2	Egr 2—Engineering Design II	2
Engl 1—English Composition	3	Egr 23—Statics	3
Math 21—Introd. Calculus	3	Engl 2—English Composition	3
Math 51—Introd. to Digital Comp.	3	Math 22—Introd. Calculus	3
PE—Physical Education	1	PE—Physical Education	1
	16		16†

†Freshman engineering students taking Air Science or Naval Science should schedule certain courses in addition to the 16 semester hours prescribed.

Sophomore Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
††Egr 73—Mechanics of Deformable Bodies	3	††Egr 53—Engineering Design III	2
††Egr 83—Structure & Properties of Solids	3	††Egr 63—Introductory Electric Systems I	4
Humanities—Social Studies Elective	3	Humanities—Social Studies Elective	3
Math 63—Intermed. Calculus	3	Math 111—Appl. Math Anal. I	3
Phys 51—General Physics	4	Phys 52—General Physics	4
PE—Physical Education	1	PE—Physical Education	1
	17		17

Junior Year

See departmental programs: pages 19, 20, or 21.

Senior Year

See departmental programs: pages 19, 20, or 21.

Program of Study in Civil Engineering for the Bachelor of Science in Engineering Degree

For uniform *freshman* and *sophomore* program see pages 18 and 19.

Junior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Δ*Humanistic-Social Studies Elective	3	Δ*Humanistic-Social Studies Elective	3
*Egr 113 Introductory Electric Systems II	3	*Egr 101 Thermodynamics	3
*Egr 123 Dynamics	3	*Egr 133 Heat Transfer	2
*Egr 143 Fluid Mechanics	2	CE 96 Measurements	3
CE 131 Structural Mech. I	3	CE 123 Hydraulic Engrg.	3
ΔApproved Elective	3	ΔApproved Elective	3
	17		17

††The combination of Egr 73 and 83 is interchangeable with the combination of Egr 53 and 63.

ΔPart of a program of electives planned with departmental approval to suit the interests and abilities of the individual student. The program will include a minimum of 6 semester hours of either economics or political science. The program will also include a minimum of 9 semester hours in mathematics, the natural sciences, or other technical subjects. English 93 will normally be part of these 9 semester hours.

*Common-Core Courses.

Senior Year

First Semester	s.h.	*Second Semester*	s.h.
Δ*Humanistic-Social Studies Elective	3	Δ*Humanistic-Social Studies Elective	3
CE 118 Materials	2	CE 116 Transportation	3
CE 124 Sanitary Engrg.	3	CE 134 Struct. Design II	3
CE 133 Structural Design I	3	CE 150 Engrg. Systems	2
CE 139 Soil Mechanics	3	CE Elective	3
ΔApproved Elective	3	ΔApproved Elective	3
	17		17

Under special circumstances, a minimum of 25 semester hours of the normally required 31 semester hours of Civil Engineering courses may be approved by the Director of Undergraduate Studies.

Program of Study in Electrical Engineering for the Bachelor of Science in Engineering Degree

For uniform *freshman* and *sophomore* program see pages 18 and 19.

Junior Year

First Semester	s.h.	*Second Semester*	s.h.
Δ*Humanistic-Social Studies Elective	3	*ΔHumanistic-Social Studies Elective	3
*Egr 113 Introd. Electric Systems II	3	*Egr 101 Thermodynamics	3
*Egr 123 Dynamics	3	*Egr 133 Heat Transfer	2
*Egr 143 Fluid Mechanics	2	*Egr 163 Fields	3
ΔMath Elective beyond Math 111	3	ΔMath Elective beyond Math 111	3
Phys 161 Modern Physics	3	EE 161 Electronics and Signals	3
	17		17

Senior Year

First Semester	s.h.	*Second Semester*	s.h.
*ΔHumanistic-Social Studies Elective	3	*ΔHumanistic-Social Studies Elective	3

*Common-Core Courses.

ΔPart of a planned program of electives to be chosen in consultation with the adviser.

EE 162 Electromechanical Energy Conversion	2
EE 163 Physical Electronics	3
EE 164 Electromagnetic Fields and Waves	3
△EE Elective	3
△Approved Elective	3
	17

EE 167 Design Colloquium	2
△EE Elective	3
△EE Elective	3
△Approved Elective	3
△Approved Elective	3
	17

Program of Study in Mechanical Engineering for the Bachelor of Science in Engineering Degree

For uniform *freshman* and *sophomore* program see pages 18 and 19.

Junior Year

First Semester	*s.h.*
△*Humanistic-Social Studies Elective	3
*Egr 123 Dynamics	3
*Egr 101 Thermodynamics	3
*Egr 143 Fluid Mechanics	2
*Math 112 Applied Math. Anal. II	3
ME 133 Mechan. Design I	3
	17

Second Semester	*s.h.*
△*Humanistic-Social Studies Elective	3
*Egr 113 Introductory Electric Systems II	3
*Egr 133 Heat Transfer	2
△Approved Elective	3
ME 102 Thermo II	3
Phys 161 Modern Physics	3
	17

Senior Year

First Semester	*s.h.*
△*Humanistic-Social Studies Elective	3
ME 134 Mech. Design II	2
ME 136 Response of Systems	3
ME Electives	6
△Approved Elective	3
	17

Second Semester	
△*Humanistic-Social Studies Elective	3
ME 161 Mech. Engrg. Lab.	2
ME Design Elective	3
ME Elective	3
△Approved Electives	6
	17

△Part of a planned program of electives to be chosen in consultation with the adviser.

*Common-Core Courses.

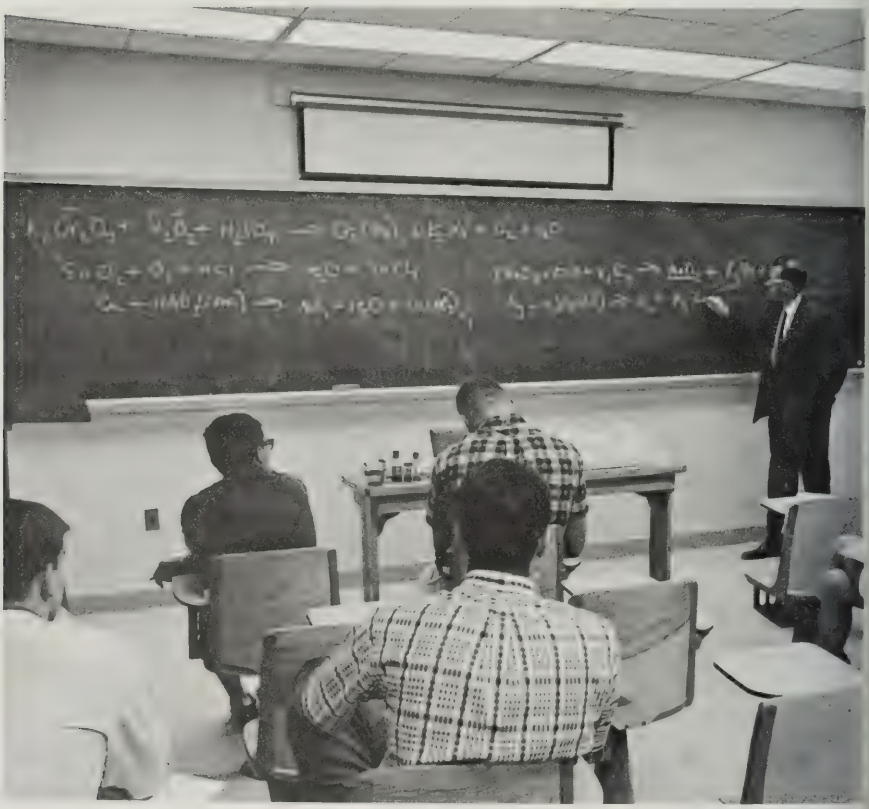
Interdisciplinary Major

This major parallels the majors in civil, electrical, and mechanical engineering and, subject to faculty approval, is offered in areas such as

bio-medical engineering, engineering mechanics, energy conversion, materials, and systems and controls.

The following requirements govern the interdisciplinary major:

1. The program shall meet the requirements of the Bachelor of Science in Engineering degree as outlined on the preceding pages, and shall in addition contain the requirements:
   (*a*) A minimum of 16 s.h. of engineering course work in addition to common-core courses must be taken in the third and fourth years, of which 6 s.h. must be design-oriented studies.
   (*b*) Limitation shall be placed on the amount of work which can be taken in a given department during the third and fourth years so that the advantages of interdisciplinary studies may be realized.
2. Each student enrolled in an approved interdisciplinary program shall be assigned to an appropriate engineering department for administrative purposes.



Special and Cooperative Programs

Reserve Officers Training Corps

Through the Naval and Air Force Reserve Officers Training programs the University is cooperating with the Department of Defense in providing well-educated officers for the regular and reserve forces of the Nation.

The Naval Reserve Officers Training Corps

There are two basic programs through which students can qualify for Naval commissions upon graduation; one, the Regular Naval Reserve Officers Training Corps program, which provides a maximum of four years in the University largely at government expense, followed by a commission in the regular Navy or Marine Corps; the other, the Contract program, which leads to a commission in the Naval Reserve or the U. S. Marine Corps Reserve.

The Regular Student. Quotas are awarded on the basis of an annual nation-wide test and selection procedure. Students selected are appointed Midshipmen, USNR, and receive four years tuition, fees, and textbooks at government expense. In addition they also receive subsistance pay and summer active duty pay which amounts to approximately $750 per year. The regular midshipman may take any course leading to a bac-

calaureate or higher degree with certain exceptions, e.g., pre-medicine and medicine, pre-theological and theological, music and art. His academic program must include 21 semester hours of Naval Science, 3 semester hours of General Psychology, one year of college physics and one year of college mathematics. The Naval Science requirement is reduced to 15 semester hours for students who are awarded Engineering Degrees upon graduation; Naval Engineering is waived and, in lieu of Naval History (NS 102, 3 s.h.), the Engineering student is required to take Naval History and Elementary Strategy (History 99, 3 s.h.). The Regular midshipman participates in two summer training cruises aboard ship and receives aviation and amphibious indoctrination at naval shore stations for one summer. Upon graduation he receives a commission as Ensign in the Regular Navy, or Second Lieutenant in the Regular Marine Corps, after which he serves with the Navy or Marine Corps, as required by the Secretary of the Navy in the same manner as his officer contemporaries who are graduates of the U.S. Naval Academy. The minimum period of commissioned service is four years for regular officers.

The Contract Student. The contract student is selected from those regularly enrolled freshmen in Duke University who desire to qualify for a commission in the Naval or Marine Corps Reserve while pursuing normal courses of study. Since he will be ordered to three years active duty immediately on graduation and commissioning, the Navy does not recommend that a medical, dental or theological student apply for this program. He must include in his academic program mathematics through trigonometry (if not successfully completed in secondary school), or one semester of college mathematics, 3 semester hours of General Psychology, and 21 semester hours of Naval Science. The Naval Science requirement is reduced to 15 semester hours for students who are awarded Engineering degrees upon graduation; Naval Engineering is waived and, in lieu of Naval History (NS 102, 3 s.h.) the Engineering student is required to take Naval History and Elementary Strategy (History 99, 3 s.h.) He has the status of a civilian who has entered into a mutual contract with the Navy and is not eligible for the benefits and pay received by regular midshipmen. He receives subsistence pay of $50 a month during his last two years in the NROTC. He goes aboard ship for one summer training cruise, normally between his junior and senior years. Upon graduation, he is commissioned in the Naval or Marine Corps Reserve and reports for a minimum of three years active duty. Upon completion of the minimum active service requirements he may request transfer to the regular component of the Navy or Marine Corps, retention on active duty as a reservist, or transfer to the inactive reserve.

Limited numbers of non-NROTC students who are in good standing after completion of their sophomore year may, after successful completion of a special six week summer training session, be enrolled as contract students at the commencement of their junior year.

Both Regular and Contract midshipmen are deferred from Selective Service by virtue of their commitment to serve on active duty after graduation. The Navy furnishes necessary uniforms and equipment. Uniforms are worn only on drill days or other special occasions when prescribed by the Professor of Naval Science. Regular and Contract students receive the same instruction and wear the same uniforms. No distinction is made between the two in the NROTC Unit. Contract students may compete each year for the Regular Program. If selected, they will be appointed to Regular status with the attendant benefits and pay.

Qualified midshipmen in their senior year may participate in a Navy sponsored Flight Instruction Program using local civilian aircraft. Completion of this program qualifies them for a Private Pilot's License.

The Air Force Reserve Officers Training Corps

This unit functions as a regular department of instruction known as the Department of Air Force Aerospace Studies. It selects, trains, and commissions college men who desire to serve in the U.S. Air Force.

For enrollment in the General Military Course (freshman and sophomore years) the student must be accepted by the institution as a regularly enrolled student; must successfully complete such general survey and screening tests as may be prescribed; and must sign a loyalty certificate with the U.S. Government. Students initially entering the University who have had previous preparatory or high school military training are normally accepted in the General Military Course at the same academic level as that in which they are accepted by the University. The student may elect to attend a six weeks Field Training Course conducted at selected Air Force Bases instead of enrolling in the General Military Course. If he choses this option he will report to the Field Traning Unit during the summer between his sophomore and junior years. To be eligible for continuation, or initial enrollment, in the Professional Officer Course (junior and senior years), a person must:

1. be a citizen of the United States;
2. be selected for advanced training under Air Force procedures;
3. enlist in the United States Air Force Reserve;
4. contract, with the consent of his parent or guardian if he is a minor, to complete the program of advanced training;
5. agree in writing to accept a commission in the U.S. Air Force, and to serve in the Air Force for the prescribed period;
6. complete successfully:
   a. the General Military Course; or
   b. six weeks of summer Field Training; or
   c. have had prior honorable service in the Armed Forces of the United States. Students who qualify for the Professional Officer Course by successfully completing the General Military Course must attend

four weeks of Field Training between their junior and senior years. Students must also agree to take orientation flights when offered; must be less than 28 years of age at the time of graduation; and must successfully complete such general survey and screening tests as may be prescribed and must be selected by the Professor of Aerospace Studies and the appropriate authority of the University.

During the second semester of their sophomore year, cadets who are participating in the General Military Course may indicate their desire to receive tuition assistance upon entry into the Professional Officer Course. Such assistance is awarded on a merit basis by a joint departmental and university selection board. Cadets who are selected for tuition assistance will receive tuition, books, laboratory fees, and travel reimbursement to and from their home residence at government expense and subsistence of $50.00 per month.

Students in the General Military Course may be deferred from Selective Service upon satisfactory completion of one semester of Aerospace Studies. Advanced students are deferred as soon as they are formally enrolled in the Professional Officer Course.

For students who are not selected for tuition assistance all uniforms, texts, and training equipment are furnished at government expense, and are paid a total of approximately $900.00 for the two years of the Professional Officers Course.

A thirty-five hour Flight Instruction Program using light aircraft is restricted to seniors who may, upon completion of the course, qualify for a Civilian Private Pilot's License. To participate in this program, Fourth Year Cadets must be physically and aptitudinally qualified for the Air Force Flight Instruction Program.

Upon graduation and completion of the Professional Officer Course, selected students for flying or line assignment will be offered commissions as Second Lieutenants in the Air Force Reserve. Reserve Officers who desire lifetime careers in the Regular Air Force may apply for regular appointments after serving on active duty for one year. Cadets who maintain a high academic and aptitudinal average are eligible for designation as Distinguished AFROTC Cadets and later Distinguished AFROTC Graduates. A designee, if fully qualified, may apply for a regular commission upon graduation.

Advanced Placement Program

The colleges have arranged for course placement on the basis of good performance on either the Advanced Placement Examinations of the CEEB or—to a more limited extent—on placement tests given by the colleges during Orientation. The College Board Advanced Placement Exam-

inations are a vehicle to courses on the sophomore level or higher in botany, chemistry, English, French, German, history, Latin, mathematics, physics, Spanish, and zoology, whereas the Duke tests are used to decide such placement only in foreign languages, biological science, and mathematics. A further distinction is that only the AP Examinations may lead to credit toward graduation for the course or courses omitted and waiver of *uniform course requirements*. The departmental directors of undergraduate study and the University Registrar are charged with the responsibility for evaluations leading to advanced placement of freshman matriculants.

Advanced Placement Examinations are given in May by the College Entrance Examination Board. Information regarding the tests may be obtained from the Board. (For information on credits, see page 51.)

Study Abroad

A student contemplating study abroad should be guided by the following provisions established by the Undergraduate Faculty Council and administered by the Committee on Study Abroad.

The student should

1. have a scholastic average of at least 2.5 (recommended);
2. obtain prior permission to study abroad from major adviser and academic dean;
3. receive certification from the foreign language department concerned that he can handle adequately the language of the country where he will study, provided that the language be taught at the freshman-sophomore level at Duke;
4. obtain, before matriculation, approval of his program of studies from major adviser and academic dean.

If the student wishes to transfer credit to Duke

1. and is participating in a program sponsored by an American group, the group must have been approved by the above committee and the program he proposes must meet the qualifications of the sponsoring group
2. or studies abroad under his own sponsorship, work to be considered for transfer must be done in the language in which courses are normally given in the institutions attended.

A leave of absence from the University is arranged for students who qualify. When possible, arrangements are made for students to preregister while abroad for the semester in which they return.



Summer Study Abroad

Duke University, in cooperation with the Experiment in International Living, runs a summer program of study abroad in France, Germany, and Spain, open to all qualified Duke students. The program offers the opportunity to earn six to eight hours of academic credit. Participants are selected by the Committee on Study Abroad and the Experiment in International Living. Applications must be submitted to the appropriate academic dean before February 15 to qualify for a summer group.

Intercollegiate Center for Classical Studies

As one of the participating members in the Intercollegiate Center for Classical Studies in Rome, Duke University may nominate majors in

Classical Studies for admission to a semester's work at the Center, usually in the junior year. Instruction is offered in Greek, Latin, Ancient History, and Ancient Art and Archaeology. Students in the program do not withdraw from Duke in the usual sense; grades transfer as earned. Overall 3.0 q.p.r. is required for admission. Some scholarship help is available. Students should consult Professors Richardson or Stanley for additional information.

Reciprocal Agreement with the Consolidated University of North Carolina

Under a plan of cooperation between the Consolidated University of North Carolina and Duke University, students regularly enrolled in the Consolidated University during the regular academic year, and paying full fees to that institution, may be admitted to a maximum of two approved courses per semester at Duke University upon payment of a nominal registration fee of two dollars and of any other special fees regularly required of all students. Under the same arrangements, students at Duke University may be admitted to approved course work at the Consolidated University of North Carolina.



Resources for Study

Faculty

Numbering over 900, the faculty is large enough to maintain a tradition of personal attention to students, the ratio being one teacher for every seven students. Many members of the faculty are or have been national leaders in their various professional organizations, as well as consultants to industry, government, or foundations, and their contributions to scholarship include innumerable publications in all areas of research. To honor outstanding faculty members, the University has established thirty-three James B. Duke professorships, and there are sixteen other named professorships as well.

University Libraries

To support a rich educational experience in a world of rapid and far-reaching change, great library collections are essential. Undergraduate students at Duke are fortunate to have available exceptional resources. The University library, among the first seventeen university libraries in the country, contains 1,863,000 volumes and 4,000,000 manuscripts. In 1966-67, 82,000 volumes were added. About 9,400 periodicals and 164 foreign and domestic newspapers are regularly received. Separate depart-

mental and professional school libraries provide notable collections in the several disciplines.

A division of photographic services, with the most modern cameras and other equipment for microfilming and photographing printed and manuscript materials, provides a battery of reading machines to serve the Library's large collection of microfilms of rare books, periodicals, and newspapers.

Construction of the main research library, adjoining the present building on the West Campus and providing more than twice the space now available for books and readers, will be completed in the spring of 1968. The entire complex was named on Founder's Day in 1966 the William R. Perkins Library, in honor of a close associate of Mr. James Buchanan Duke.

The Woman's College library, with its own attractive Georgian building, contains 163,000 volumes in an open stack collection, chiefly those books most frequently used in the undergraduate curricula. The School of Engineering also maintains its own library which contains 38,500 volumes and 450 periodicals. The larger collections of the main and specialized libraries are at hand when needed.

More detailed information may be obtained in a "Student's Guide to the General Library," available on request to the Librarian of the University.

Laboratories

In addition to the laboratories in the various science departments (Botany, Chemistry, Geology, Physics, Psychology, and Zoology), there are specialized facilities at Duke University Marine Laboratory in Beaufort, North Carolina; at Highlands Biological Laboratory in Highlands, North Carolina; in the Duke Forest at Durham, North Carolina; and in the Sarah P. Duke Gardens on the West Campus of Duke University.

Admission

New students are admitted for the academic year at the opening of school in the fall.

The size of the entering classes is approximately as follows: Trinity College, 650; The Woman's College, 350; School of Engineering, 140; School of Nursing, 80. Since enrollment is limited, the Committee on Admissions selects those students who in its judgment are best qualified to benefit from the opportunities which the colleges offer. Selection is based not only upon academic grades and test scores but also upon recommendations of school officials and other personal criteria.

Requirements

Although there are no inflexible subject matter requirements, at least fifteen acceptable units of secondary school credit must be presented. Of these at least twelve must be in college preparatory subjects: English, foreign language, history and social studies, mathematics, and physical or biological sciences. Applicants for the School of Engineering are advised to present four units of mathematics and at least one unit in physics or chemistry.

Students applying for admission are required to take the Scholastic Aptitude Test, the English Composition test, and two other achievement tests of their own choosing given by the College Entrance Examination Board. It is recommended that an applicant who has had two or more years of a foreign language in secondary school take the achievement in that language. The foregoing recommendation is not applicable to candi-

dates for the School of Engineering. Candidates applying to the School of Engineering must include the appropriate mathematics test.

Prospective students are urged to broaden their reading outside of class during their senior year and to make the acquaintance of books and magazines that do not form part of the subject matter of their courses. At the same time, they should take every opportunity to increase their competence in writing. Those who cannot write simple, clear, grammatical English prose will be progressively at a serious disadvantage in the competition for admission and also in the general work of the freshman year. Careful attention to correctness in English in correspondence and on application blanks cannot be too seriously stressed for candidates for admission.

Early Decision Plan

For the well-qualified student who has definitely decided to enter Duke if accepted, the University offers to reserve a place by "early decision" on December 1 of the student's senior year in secondary school. The deadline date for completing applications for Early Decision is November 1; therefore, prospective early decision candidates should make arrangements to take the Scholastic Aptitude Test and three Achievement tests, including English Composition, on or before the July testing date preceding their senior year.

Regular Admission

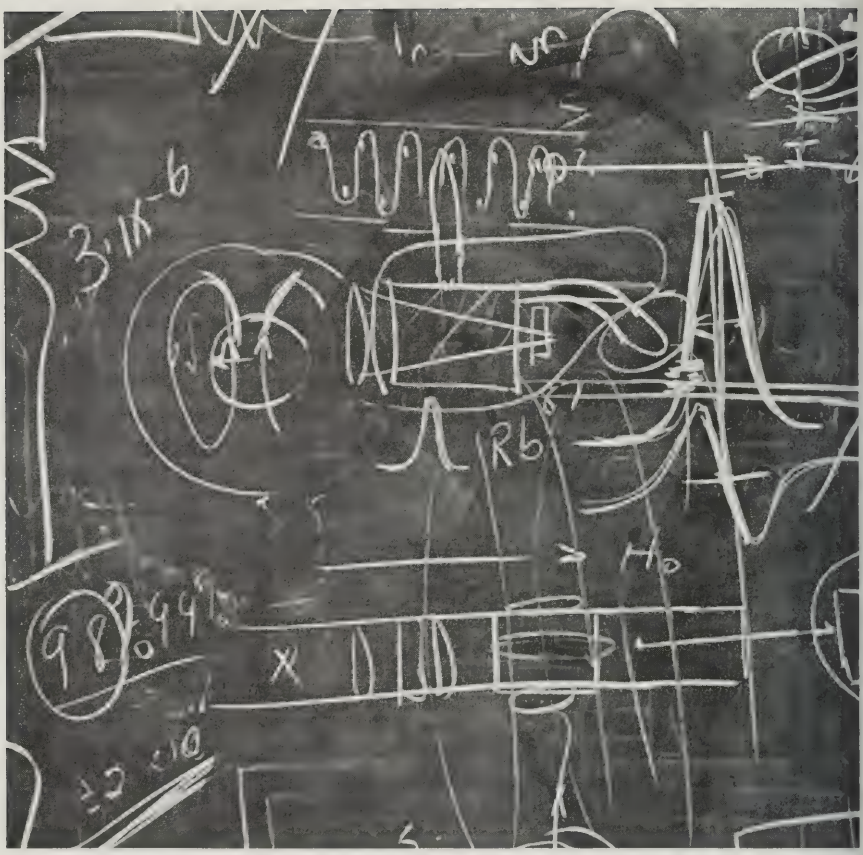
Candidates for regular admission must apply no later than January 15, and normally do so during the fall of the senior year. For this group, decisons are mailed by April 15.

Application forms and instructions regarding procedure and necessary documents to be included will be sent upon request to the Office of Admissions, Duke University, Durham, North Carolina, 27706. A nonrefundable processing fee of $10.00 must accompany the submission of the full application form.

A candidate for admission who wishes to arrange an interview should do so through the Director of Undergraduate Admissions.

Admission to Advanced Standing

Admission by transfer from other institutions may be arranged for a number of students under certain well-defined regulations. All such candidates must submit official transcripts of all work completed at other colleges, accompanied by a statement of honorable dismissal and scores on the Scholastic Aptitude Test of the College Entrance Examination Board. Courses on which a grade less than C has been earned cannot be accepted for transfer credit. Students may not apply for transfer beyond



admission to the junior class. Further detailed regulations for admission by transfer may be obtained from the Office of Admissions.

A small number of special students of mature age may be admitted for such courses of instruction as their earlier training and experience may qualify them to take. They may not be accepted, however, as candidates for a degree in a regular course unless they are able to meet all normal requirements for admission which apply to all beginning students.

Readmission of Former Students

A student who desires to return, following withdrawal from college, should apply to the Director of Undergraduate Admissions. He will be asked to send a detailed statement of his activities since withdrawal. If practicable, the student should arrange for an interview with the appropriate Dean of his College.

Financial Information

Fees and Expenses

The prospective student who seeks the optimum opportunity in higher education will not be a bargain hunter. Certainly, some sound plan for paying the cost of college must be devised, but this plan should be formulated after the thoughtful selection of an institution has been made. No college or university can honestly say that an education at the college level is inexpensive. Most university people and the ever growing college alumni families across our nation, however, will reflect the feeling that the benefits derived from a college education constitute a handsome return on the dollars invested.

Each student going to college should analyze carefully his financial situation. In making such analysis it should be recognized that the primary responsibility for defraying the cost of an education lies with the student and his family. The typical college student can depend upon some contribution from his family's current income, a proportionate share of family savings, and anticipated income from summer employment. The number of years of study contemplated and the number of dependent children in the family should be considered in computing the funds which will be available in a particular year.

Fees paid by the students cover only a part of the cost of their instruction and of the operations of the University. Income from endowment

and contributions from the alumni, alumnae, and other public-spirited men and women meet the balance, which constitutes more than half the total cost.

Estimated Expenses for an Academic Year

Certain basic expenditures are to be considered in preparing a student's budget, such as tuition, the general fee, room and board. These necessary expenditures together with a reasonable amount allotted for miscellaneous items such as books and supplies are shown below:

	Men	*Women*
Tuition	$1,600.00	$1,600.00
General Fee	200.00	200.00
Room Rent (Double Room)	335.00	360.00
Board	*600.00	†500.00
Books and Supplies	120.00	120.00

*Cafeteria estimate.
†Board rate.

It should be realized that additional expenses will be incurred which will depend to a large extent upon the tastes and habits of the individual. It is realistic to suggest that the average Duke student, however, can plan on a budget of $3,300.00 for the academic year. Travel costs, clothing purchases, and other major expenditures would have to be added to this estimate.

Debts

No records are released and no student is considered by the faculty as a candidate for graduation until he has settled with the Bursar for all indebtedness.

Bills may be sent to parents or guardians provided the Bursar has been requested in writing to do so. Failure to pay bills on or before the due dates will debar the student from class attendance until the account is settled in full.

Tuition and Fees

Tuition and General Fee. The tuition of $800.00 and the general fee of $100.00 are due and payable not later than the day of registration for a particular semester. After the day of registration no refund of the tuition or the general fee will be made except for involuntary withdrawal to enter the armed services.

Registration Fees and Deposit. New students, on notification of ac-

ceptance, are required to pay a non-refundable first registration fee of $20.00 and to make a deposit of $50.00. The deposit will not be refunded to accepted applicants who fail to matriculate. For those who do matriculate, $25.00 of the deposit serves as a continuing room deposit for successive semesters, and the remaining $25.00 serves as a continuing registration deposit. Arrangements for refund of the $25.00 room deposit are described in information furnished each resident student by the Housing Bureau.

Readmission. Students who have been readmitted to the University after an absence of one or more semesters, on notification of readmission, are required to make the $50.00 room and registration deposit.

Late Registration. Students who register in either semester at a date later than that prescribed in the Calendar of the Colleges must pay to the Bursar a fee of $5.00.

Refunds. The $25.00 pre-registration deposit will be refunded to students (1) whom the University does not permit to return, (2) who graduate, or (3) who request the refund at the time of pre-registration, thus indicating their intention not to return for the following semester. The pre-registration deposit will not be refunded to students who pre-register and fail to enter the following semester on schedule.

ROTC Deposit. An Air Force ROTC deposit of $20.00 is required of students enrolling in Air Science to cover possible loss of military equipment issued to them. This deposit is refunded to the student upon return of issued equipment.

Fees for Special Students. In the regular academic year students who register for no more than two courses with a maximum credit of eight semester hours are classified as special students. They are charged a registration fee of $5.00 for each course and $55.00 for each semester hour of course credit. Registration for nine or more semester hours, or three or more courses, requires payment of full fees.

Fees for Auditing. Auditing of one or more courses without charge is allowed students paying full fees, provided that the consent of the instructor is obtained. Students who are enrolled for not less than three nor more than eight semester hours may audit other courses by payment of $27.50 for each course audited.

Fees for Duke Employees. Certain full-time employees with two or more years of service with the University may request permission to take one or two courses (but not more than seven semester hours during any one semester) which would contribute to their professional and personal advancement. Permission may be granted based on the individual merits and circumstances of each application. Employees receiving permission to take such courses will be charged $5.00 per course plus $27.50 per semester hour. A course may not be audited unless another course is taken for credit.

Fees for Transcripts. Requests for transcripts should be directed to

the Office of the Registrar. Ten days should be allowed for processing. One transcript is issued free of charge. Additional copies are $1.00 each.

Fees for Course Changes. Changes in courses for reasons not arising within the University require a payment of $1.00 for each change made. No course may be elected later than one week after the opening of the semester, and no student may be admitted to any class without an official enrollment.

Living Expenses

Housing. In the residence houses for undergraduate men, the rental charge for a single room is $445.00 for the academic year or $222.50 for each semester; for a double room the charge is $335.00 for each occupant, or $167.50 per semester for each occupant. Rental rates in the air-conditioned dormitories are $500.00 for a single room for the academic year, or $250.00 for each semester; for a double room the charge is $375.00 for each occupant, or $187.50 per semester for each occupant. Information concerning the student's obligations under the housing contract is published in the Undergraduate Regulations—for Trinity College and the School of Engineering.

In the residential units of the Woman's College the rental charge for a single room is $480.00 for the academic year or $240.00 for each semester. The rental charge for a double room is $360.00 for each occupant, or $180.00 per semester for each occupant. A section of the Graduate Center, West Campus, is reserved for Woman's College students. Detailed information concerning the student's obligations under the housing contract is published in the Woman's College Handbook.

Food Services. The dining facilities on the West Campus include two cafeterias, with multiple-choice menus, and the Oak Room where full meals and *a la carte* items are served. The cost for the academic year will approximate $600.00 but would vary from this amount depending upon the taste of the individual.

The dining halls in which all resident women have their meals are located in the Woman's College Union and in Gilbert-Addoms residence hall. The charge for board is $250.00 per semester, payable at the time of registration. If a student withdraws during the first six weeks of the semester, a board refund is made on a *pro rata* basis; if withdrawal occurs after that time, no refund is allowed.

Student Aid

Duke University is interested in students with ability and ambition. It is the aim of the University Financial Aid Committee and others affiliated with the Financial Aid Program to provide, insofar as possible, the

financial assistance required by students accepted for entrance who are unable to defray the cost of college from their own resources. The assistance is made available in the form of scholarships, grants-in-aid, loans, and part-time employment.

In 1967-68 financial aid totaled $1,638.000.00. Of this amount $996,-648.00 was allotted to 1,191 undergraduate students in the form of scholarships, grants-in-aid, and remissions of tuition; $241,700.00 in student loans, and approximately $400,000.00 through part-time employment on the campus and in the city of Durham and the surrounding area.

Freshmen students shared proportionately in this aid: 352 received awards totaling $363,937.00 in direct assistance not including loans or part-time employment. Loans were made to 136 students totaling $69,850.00 in addition to other assistance received from Duke University.

Scholarships

All requests for applications for scholarships, grants-in-aid, industry scholarships, or remissions of tuition should be addressed to the Office of Admissions, Duke University, Durham, North Carolina.

All candidates for scholarships and grants-in-aid must submit an official Application for Admission to the University and the Application for Scholarship to the Office of Admissions. Scholarship candidates who desire to be considered for the maximum value of scholarships on the basis of financial circumstances are required to submit the "Parents' Confidential Statement" of the College Scholarship Service. The "Parents' Confidential Statement" may be obtained from high school principals or upon request from the Admissions Office.

Scholarship candidates should initiate their applications during the fall semester of their senior year of study in secondary school. Instructions concerning the specific requirements and deadline dates will accompany the application materials sent to applicants for scholarships and grants-in-aid.

Awards annually available to undergraduate students at Duke University fall into several major categories as follows:

Angier B. Duke Memorial Scholarships. Recipients of these awards are students whose superior records mark them as young men and young women who give outstanding promise of becoming leaders in their chosen fields of endeavor.

Number available: 31 for each freshman class.

Value: To $2,800.00 annually.

W. N. Reynolds Memorial Scholarships. Recipients of these awards are students of outstanding ability who have made superior records and show promise of constructive leadership. In considering candidates for the awards, first consideration will be given to:

1. Children of employees of R. J. Reynolds Tobacco Company or any of its affiliates or subsidiaries.
2. Children of families residing in Forsyth County, North Carolina.
3. Other candidates who are residents or natives of North Carolina.

Number available: 4 for each freshman class
Value: Up to $2,800.00

Mary Duke Biddle Scholarships in Music Composition. Two scholarships at a fixed stipend of $2,500.00 per student are available to each entering class. They are renewable from year to year so long as the student does satisfactory work. The student wishing to apply for this award will proceed in the normal manner but be required to submit samples of his musical compositions. Eligibility is limited to students desiring to major in music.

Duke University School of Nursing Scholarships. Recipients of these awards are young women whose superior records indicate outstanding promise of leadership in the profession of Nursing.

Number available: 11 for each freshman class.
Value: $200.00 to $1,400.00 annually.

Huguenot Scholarship. A scholarship of $1,000.00 per year is available from the Huguenot Society of America to a decendant of a Huguenot ancestor.

Christian Vocations Scholarships. Students preparing to enter full-time religious work are eligible to apply for special consideration on the basis of need. These students will be required to submit the "Parents' Confidential Statement." Students with need will be recommended by the Director of Financial Aid to the Christian Vocations Scholarship Committee which will consider the commitment of the applicant. Students approved by the Christian Vocations Scholarship Committee are required to sign a note each semester for the amount of financial assistance granted to them by the University Scholarship Committee. These notes will be cancelled upon evidence that the student has entered full time Christian work after graduation. Pre-ministerial and religious education students ranking in the upper quarter of their graduating classes are encouraged to apply for an Angier B. Duke Memorial Scholarship.

A number of National Methodist Scholarships, valued at $500 per year, are available on a basis of demonstrated need to Methodist students who have given evidence of leadership in their local Methodist Youth Fellowship Groups.

Corporation Scholarships. Certain scholarships financed by private corporations are available annually to undergraduate students at Duke University. The selection of the recipients of these awards is made by the University Scholarship Committee. These scholarships are assigned to students whose records of scholarship and leadership are outstanding and whose financial need can be demonstrated.

Value: $200.00 to $2,000.00 annually.

Scholarships for Foreign Students. A limited number of awards will be made each year to qualified students from other countries who enter either as freshmen or as students with advanced standing. Candidates for these awards are required to submit the "Application for Scholarship" and the "Parents' Confidential Statement" of the College Scholarship Service provided by the Admissions Office of Duke University.

Grants-in-Aid

Recipients of these awards are able students who need financial assistance in order to meet the cost of attending college.

Number available: Approximately 400 annually.

Value: From $100.00 to $1,500.00 annually.

Remissions of Tuition

Children of ministers in the North Carolina and Western North Carolina Conferences of the Methodist Church who are residents in the Conference and children of ministers of all faiths residing in Durham County are eligible to receive a remission of the tuition charge for a maximum of eight semesters of undergraduate study at Duke University.

Tuition Grants

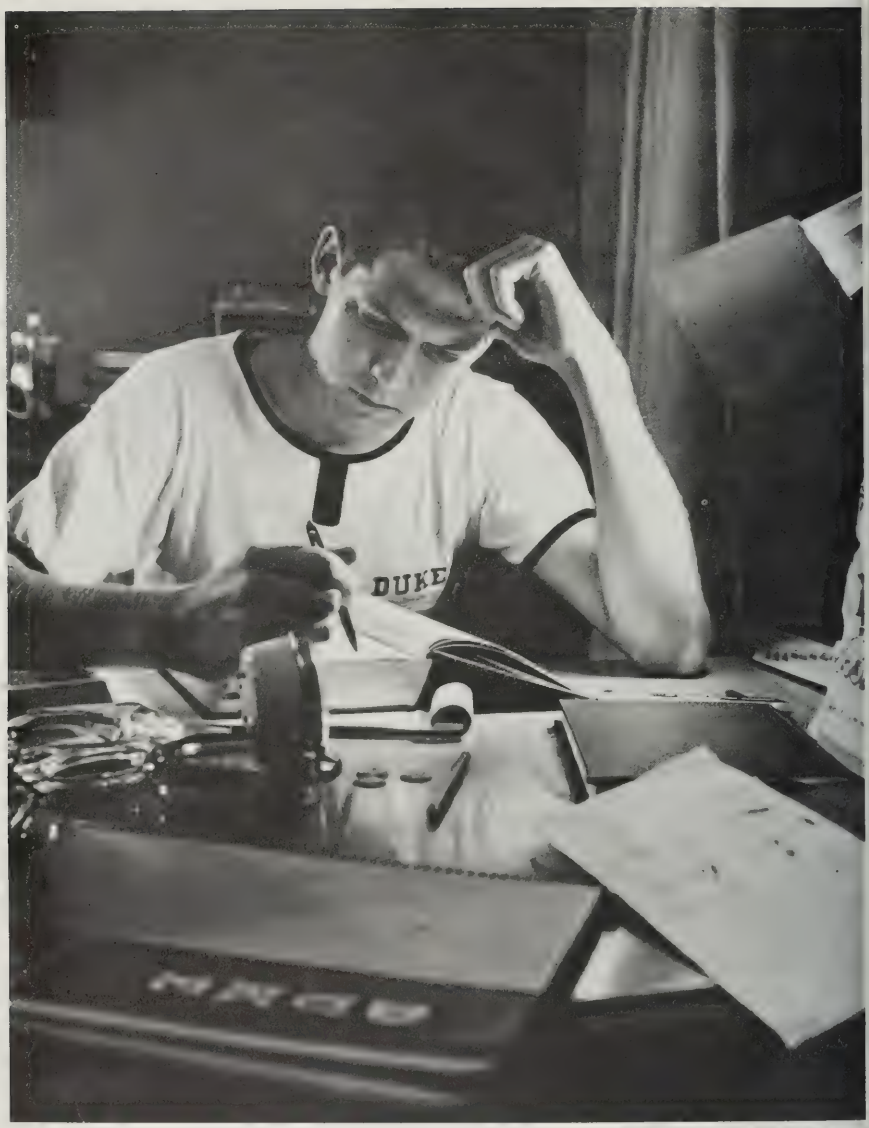
Tuition grants are available to children of certain qualified staff members of Duke University for a maximum of eight semesters of undergraduate study at Duke University.

Loans

Loan funds held in trust by the University as well as funds supplied by the federal government through the National Defense Education Act of 1958 are available to qualified students. Freshmen as well as upperclassmen are eligible to apply for a student loan.

Loans generally mature after borrowers have left the University. Loan interest on long term loans from University funds accrues at the rate of one per cent from the date of each note. After a student has left the University permanently, the loans begin bearing interest at the rate of three per cent per annum. The balance unpaid after five years bears interest at the rate of six per cent per annum.

In addition to local loan funds, Duke University participates in the student loan program established under the provisions of the National Defense Education Act of 1958. Repayment of loan funds under the National Defense Education Act of 1958 normally begins nine months after the student terminates his education at the University, with com-



plete repayment scheduled within a ten-year period. Interest accrues at the rate of three per cent commencing nine months after the borrower ceases to be a full-time student at an institution of higher education. Special benefits to those teaching in public or private nonprofit elementary and secondary schools and in institutions of higher education permit a portion of the loan to be cancelled depending upon the length of teaching

service. Complete details regarding the student loan program may be obtained by writing directly to the Student Loan Office.

The Student Loan Committee in approving loan applications selects those students who from the standpoint of character, scholastic attainment, personality, and degree of financial need are deserving of this consideration. A student in residence may not, without special permission, own or operate a car during the academic year for which the loan is granted. Loan applications must be submitted not later than July 1, preceding the academic year for which assistance is requested.

Employment Opportunities

The Financial Aid Office maintains an employment service for students who need part-time jobs. There are many opportunities both on the campus and in the city of Durham. A considerable number of students each year help defray their college expenses by working.

Those students accepted for admission to Trinity College and the School of Engineering in need of part-time employment should apply to the Financial Aid Office, Duke University, Durham, North Carolina. Students in the Woman's College should apply to the Assistant Dean of Undergraduate Women, 111 East Duke Building, Duke University, Durham, North Carolina.

Prizes and Awards

The achievements of undergraduate students are recognized in various fields of college activity. The following prizes suggest the range of the recognition:

The Debate Council. This council authorizes the awarding of medals to members of the graduating class who have represented the University in at least two intercollegiate debates. The medals are given by the local chapter of the Tau Kappa Alpha Fraternity.

The Robert E. Lee Prize. The gift of the late Reverend A. W. Plyler, of the class of 1892, and Mrs. Plyler. The sum of $50 is awarded annually at Commencement, preferably to that member of the senior class of Trinity College or the College of Engineering who, in character and conduct, in scholarship and athletic achievement, in manly virtues and capacity for leadership, has most nearly realized the standards of the ideal student.

Alpha Kappa Psi Medallion. Beta Eta Chapter of Alpha Kappa Psi, a professional fraternity in commerce, awards annually the Alpha Kappa Psi Scholarship Key to the male senior student pursuing a degree in the Department of Economics and Business Administration who has attained the highest scholastic average for three years of collegiate work in this University.

Medal of the North Carolina Association of Certified Public Accountants. The North Carolina Association of Certified Public Accountants annually awards a medal to the senior who, in the judgment of his instructors, is the most outstanding student in accounting in his graduating class.

Julia Dale Prize in Mathematics. This in an annual cash prize of at least $50. The winner is selected by the Department of Mathematics on the basis of excellence in Mathematics. In some years first and second prizes are given.

The Henry Schuman Music Prize. This prize of $100 is awarded annually to an undergraduate of Duke University for an original composition of chamber music or a distinguished paper in music history or analysis. The award is sponsored by The Woman's College and the Department of Music of Duke University through a continuing gift from Dr. and Mrs. James H. Semans who named the prize after Mr. Henry Schuman, a life-long friend of the Semans and Trent families, a talented amateur violinist, and one who helped to build valued collections in the Duke Library.

The Tau Beta Pi Prize. A prize such as an engineering handbook is awarded each year by the Beta Pi, engineering national honor society, to a sophomore student in engineering for outstanding scholastic achievement during the freshman year.

The Phi Lambda Upsilon Prize. Phi Lambda Upsilon, honorary chemical society, yearly awards a suitable prize to an outstanding junior who is majoring in chemistry. The recipent's name is inscribed on a plaque displayed in the Chemistry Library.

The American Society of Civil Engineers Prize. This prize consists of a Certificate of Award and a one year's payment of dues in the American Society of Civil Engineers. Awards are made annually by the North Carolina Chapter to the two outstanding seniors in civil engineering based on the recommendation of the faculty of the Civil Engineering Department. The basis for selection is the student's scholastic record, his contribution to the student chapter, and his participation in other college activities and organizations.

The American Public Works Association Prize. This prize consist of a Certificate of Award, one year's payment of dues in the American Public Works Association, and a $25 cash award made annually by the North Carolina Section to an outstanding senior in Civil Engineering based upon the recommendation of the faculty of the Civil Engineering Department. The basis of selection is the student's scholastic record and his interest in a career in public works.

The George Sherrerd III Memorial Award in Electrical Engineering. This award was established in 1958 by the parents of George Sherrerd III, a graduate of the class of 1955, to recognize outstanding undergraduate scholarship. The award, consisting of the income from a fund of $5000.00,

is made annually to that senior student in Electrical Engineering who, in the opinion of the Electrical Engineering faculty, has attained the highest level of scholastic achievement in all subjects and simultaneously has rendered significant service to the School of Engineering and the University at large. The recipient's name is inscribed on a plaque displayed in the Engineering Building.

The Charles Ernest Seager Memorial Award. This award, established in 1958 by the widow and friends of Charles Ernest Seager, a graduate of the class of 1955, recognizes outstanding achievement in the annual Student Prize Paper Contest of the Duke Branch of the Institute of Electrical and Electronics Engineers. The award consists of inscribing the name of the contest winner on a plaque displayed in the Engineering Building.

The Milmow Prize. This prize consists of a certificate of award and a one year's payment of dues in the Institute of Electrical and Electronics Engineers for the membership year in which the honoree is awarded his baccalaureate degree. It is awarded annually to that student from North or South Carolina graduating in the Department of Electrical Engineering who, in the opinion of the faculty of that department and as shown by his grades, has made the most progress in electrical engineering during his last year in college.

The T. C. Heyward Award. This award is given annually to the outstanding Mechanical Engineering Sophomore by Pi Tau Sigma. The award will normally consist of a handbook as well as a small cash award.

The Walter J. Seeley Scholastic Excellence Award. This award is presented annually by the Engineers Student Council, in the name of Dean Emeritus Walter J. Seeley, to that member of the graduating class of the School who has achieved the highest scholastic average in all subjects and who has shown diligence in the pursuit of an engineering education. The recipient of the award is determined by a committee composed of the chairmen of the respective departments, the Assistant Dean of the School of Engineering, and a representative of the Engineers Student Council. This award is initiated in the spirit of academic excellence and professional diligence demonstrated by Dean Seeley. The Council hopes that this award will serve as a symbol of the man and the ideals for which he stands.

The Chemistry Department Award. This prize is awarded in the spring of each year for scholarship in chemistry, physics, and mathematics. The prize consists of a one-year junior membership in the American Chemical Society and a one-year subscription to either the *Journal of the American Chemical Society* or *Industrial and Engineering Chemistry*. To qualify for this prize, the student must (1) be enrolled as an undergraduate of Duke University and (2) be taking or have taken a fourth-year chemistry course. The selection is based on the quality-point average for all courses taken in chemistry, physics, and mathematics. In case of a tie equal awards are given.

The James B. Rast Memorial Award in Comparative Anatomy. This award is given annually by the parents of James Brailsford Rast in memory of their son, a member of the class of 1958 at Duke University. The award, consisting of the *Atlas of Descriptive Human Anatomy* by Sobotta and bearing the James B. Rast Memorial bookplate, is given to the student who demonstrates the greatest achievement in the study of comparative anatomy.

The Anne Flexner Memorial Award in Creative Writing. This award has been established by the family and friends of Anne Flexner, who graduated from Duke in 1945. It consists of fifty dollars in cash and a number of books chosen by the student. The award is given annually for the best piece of creative writing submitted by a Duke undergraduate. The competition is limited to short stories (5,000 word limit), one-act plays (5,000 word limit), poems (100 line limit), and informal essays (3,000 word limit). Only one manuscript may be submitted by a candidate, and it must be delivered to the English Office, Room 325 Allen Building, before April 15.

The William Senhauser Prize. This prize is given by the mother of Willam Senhauser in memory of her son, a member of the Class of 1942, who lost his life in the Pacific Theatre of War on August 4, 1944. The award is made annually to the sophomore or junior in Trinity College or the School of Engineering who has made the greatest contribution through participation and leadership in intramural sports. The winner of this prize is chosen by a committee selected by the President of the University.

The Friends of Duke University Library. This group offers three prizes in an annual contest open to all undergraduate students for the best book collections acquired during their college year. The contest is supervised by the Undergraduate Committee of the Friends of the Library, which announces each fall the terms of the award. Inquiries may be directed to the Curator of Rare Books. Collections entered in the contest are exhibited each spring in the General Library. The prizes are awarded on the basis of the student's collection, a personal interview to determine the overall planning and objectives of his collecting activity, and his familiarity with his own books and the general field of his collecting interest.

The William T. Laprade Prize in History. This prize, in honor of William T. Laprade, who was a member of the History Department at Trinity College and Duke University from 1909 to 1953, and Chairman of the Department from 1938 to 1952. This prize is awarded to that senior who is graduating with distinction and whose senior essay in history has been judged unusually meritorious.

The Donald E. Spofford Medal. This medal is presented to the most outstanding member of the Men's Student Government Association.

The Horace F. Inman Award. This award is made to the fraternity, freshman, and independent dormitory which throughout the year demonstrates the best qualities in citizenship.

University Registrations and Regulations

Registrations

Pre-registration

Each new student receives a copy of the *Academic Guide for Freshmen* and the *Bulletin of Undergraduate Instruction* in the summer and submits a trial course program for his first semester. All other students preregister for a given semester in the fall or spring of the year on the basis of information and advising available to them. Evidence that the continuing pre–registration deposit of twenty-five dollars has been paid (See pages 36-37 for detailed information) must be submitted at the time of spring pre–registration. A student's tentative course program is filed for permanent record in the Central Records Office after each pre–registration. He may complete his registration by mail. Students who pre–register in either semester at a date later than that specified in the calendar of the colleges are subject to a penalty of $5.00, payable to the Treasurer. Students who do not pre–register within an allotted time must be readmitted to the college by application to the Director of Admissions.

Semester Opening and Registration

Each pre–registered undergraduate student is required to return to the University each semester on registration day and to report to his college

office by 6 p.m. Ample time should be allowed since failure to report entails loss of the continuing registration deposit and of registration in each class for which one is pre-registered. An official enrollment is required for admission to any class.

After pre-registration course changes may be made on registration day or during the first week of classes. Changes in courses for reasons not arising within the University entail a fee of $1.00.

Academic Regulations

Course Requirements

During each semester of the regular academic year, the academic program of an undergraduate student normally consists of four or five courses totaling fourteen to seventeen semester hours (Trinity and the Woman's College), or fifteen to seventeen semester hours (School of Engineering), in either case exclusive of physical education. A maximum program of nineteen semester hours exclusive of physical education has also been fixed since the University is committed to quality work and education that is not exclusively course centered. No student is allowed to take fewer than fourteen semester hours of work without special permission from the appropriate dean or to take more than the normal load of work unless his average grade in the preceding semester is higher than a C.

Prior to pre-registration in the second semester of his sophomore year, each student is required to choose his major field and confer with his departmental adviser about the requirements for major and related work.

Special permission of the Director of Undergraduate Studies in the student's major department and the approval of his dean are required for a senior to elect for credit toward graduation any course open primarily to freshmen. Juniors require similar approval to take more than one such course. In courses numbered 200-299 which carry graduate credit, a junior must have at the time of registration an over-all B average. These courses are not open to freshmen or sophomores.

Course Audit

With the consent of the instructor, a full-time, degree student is allowed to audit one or more courses in addition to the normal program. After the first week of classes in any semester, no student classified as an auditor in a particular course may take the course for credit, and no student taking a particular course for credit may change classification to an auditor. A student may not repeat for credit any course he has previously audited.

Auditors submit no daily work, take no examinations, and receive no credit for courses.

Course Changes

New courses may not be elected later than one week after the opening of classes during the semester. Procedures for withdrawal from a course are determined by each of the undergraduate colleges, but in any instance permission of the Dean is required.

Attendance Regulations

The attendance regulations specifically place the responsibility for class attendance upon the individual student. *He is expected to attend classes regularly and punctually.* A student should recognize that one of the most vital aspects of a residential college experience is attendance in the classroom and that the value of this academic experience cannot be fully measured by testing procedures alone.

The members of the student body are considered sufficiently mature to appreciate the necessity of regular attendance, to accept this personal responsibility, and to demonstrate the kind of self-discipline essential for such performance and, conversely, to recognize and accept the consequences of failure to attend. An instructor is privileged to refer to the Dean of the appropriate college for suitable action students who in his opinion are causing their work or that of the class to suffer because of absences or latenesses.

Absences from tests and required classes due to illness will be excused when certified by a proper medical official. Absences due to authorized representation of the University may be excused. Officials in charge of groups representing the University are required to submit names of those persons to be excused to the appropriate Dean's office forty-eight hours in advance of the hour when their absences are to commence.

Leave of Absence

An upperclassman in good standing may apply in writing to his dean for approval to take a leave of absence. If granted, the leave will begin at the end of the semester in which application is made and will last for one or two semesters. While on leave a student must inform his dean before November 1 (for a fall leave) or April 1 (for a spring leave) of his intention to return for the next semester. A student failing to meet the deadline will be considered to have withdrawn from the University and will have to apply for readmission.

Regulations for Participation in Athletics and Other Activities

Members of athletic teams or other student groups engaging in public representation of the University are expected to be carrying their current work satisfactorily. Students may be barred from participation in such representation if, in the opinion of the dean of their college, they fail to meet this requirement.

Grading

Final grades on performance in academic work are sent to students and parents, or guardians, after the examinations at the end of each semester. In addition six-weeks advisory grade reports for freshmen are mailed each semester. Grade symbols are:

Passing. Passing grades are A, exceptional; B, superior; C, average; and D, low pass. A passing grade may be modified by a plus (+) or a minus (—).

Failing. A grade of F indicates that the student has failed the course and that in order to receive credit for the course he must reregister for the course and repeat the work in class.

Pass-Fail Option for Elective Courses. With the consent of the instructor, a third or fourth year student may choose to be graded on a pass-fail basis in one free elective course each semester. A student accepted on this basis completes all the work of the course but receives either a pass (P) or fail (U) grade in lieu of a standard grade. The credit hours earned apply only in the total cumulative average (see p. 52), as do transfer and Advanced Placement credits. For that reason they are weighted as "C's" toward the required senior "C" average. A pass grade may not subsequently be converted to a regular letter grade nor may the course be retaken on a regular credit basis. After the first week of classes in any semester, no student classified as pass-fail in a particular course may change to regular registration and no student in regular registration may change classification to pass-fail.

Absence from the final examination. In all cases in which the student is absent from a final examination, he receives an X instead of a final grade. If he does not present an acceptable explanation for his absence to the appropriate Dean's office within forty-eight hours after the scheduled time for the examination, the X is converted to an F. If the absence is excused, the student arranges with his dean and the instructor for a make-up examination. An X not cleared by the end of the semester following the examination missed is converted to an F.

Incomplete work. If because of illness or other emergency a student's work in a course is incomplete, he may receive an I for the course instead of a final grade. Incomplete courses must be completed before the close

of the succeeding semester; otherwise, the I is converted to an F and the course must be retaken if the student is to receive credit for it. In case a student whose work is incomplete is also absent from the final examination, he receives an X for the course.

Withdrawal. The letter W is used to indicate official withdrawal from a course. If a student drops a course without the permission of his dean, a grade of F is recorded. If he drops with permission a course in which he is failing, the grade for that course is recorded as an F unless in the judgment of the Dean, circumstances do not require this penalty but permit a notation of a W to indicate official withdrawal.

Credits

The unit of credit used is the semester hour, which signifies one class period a week throughout the semester. Two or three hours of laboratory work are equivalent to one hour of class work.

Seniors who at the beginning of a semester lack no more than nine hours for the fulfillment of the requirements for the A.B. or B.S. degree may enroll, with permission of the Dean of the Graduate School, in graduate courses for a maximum total program of fifteen semester hours.

Advanced Placement Course Credit

Any student who has earned a score of three or higher on an Advanced Placement examination of the CEEB and is approved for placement in a sophomore-level course or above may be considered for course credit in appropriate subjects. (See p. 26). For those presenting scores of four or five the award of credit will be made automatically upon matriculation; for those presenting scores of three it will be determined with the approval of the University department concerned no earlier than at the end of the first semester. Course credit may be granted for one or two semesters in each subject area in which examination is offered in the Advanced Placement Program.

Transfer Credit

Transfer credit is evaluated from regionally accredited, degree-granting institutions. Courses taken away from Duke in which grades of less than C have been earned are not acceptable for transfer credit. Credit for work completed at other institutions will be determined in relation to the curriculum requirements of the college in which the student enrolls at Duke.

Credit for courses in science or language offered for advanced standing in any of the undergraduate colleges by a transfer student from a junior college will be evaluated by the departments concerned.

The maximum amount of credit acceptable from a junior college is sixty

semester hours, exclusive of physical education. No credit is given for work completed by correspondence, and credit for no more than six semester hours is allowed for extension courses.

Residence Requirements

Ordinarily, the final four semesters—or equivalent—of work must be earned at Duke except in those instances in which a student has been approved to take his junior year abroad or been granted a leave of absence. (For engineering students, thirty of these sixty semester hours must be from those normally taken in the senior year.) Students who meet this requirement but who still lack six to eight semester hours in final fulfillment of requirements may take this work in another institution of approved standing, provided the course is approved by the Chairman of their major department and by the Dean.

In the case of women six or more years out of The Woman's College, up to 30 hours of work may be taken in another institution of approved standing in final fulfillment of requirements providing that (1) she was in good standing when she withdrew from Duke; (2) she proposes *in advance* a plan which ensures that the work to be taken elsewhere will be comparable to the work required at Duke; (3) she demonstrates that a return to Duke to complete the work for the degree would be either impossible or occasion serious hardship; and (4) she is prepared to take Duke examinations on any courses taken elsewhere if required by the department concerned.

Quality Points and Class Standing

An overall indication of the quality of student performance is provided by assigning quality points per semester hours of a course as follows:

Grade	*Quality Points*	*Grade*	*Quality Points*
A+	4.0	C+	2.3
A	4.0	C	2.0
A−	3.7	C−	1.7
B+	3.3	D+	1.3
B	3.0	D	1.0
B−	2.7	D−	1.0
		F	0

On the basis of these points two averages are maintained for students, one a Duke cumulative average (determined by dividing the number of quality points earned at Duke by the total number of hours carried at Duke—not semester hours passed), the other a total cumulative average. The latter also includes credit assigned to work transferred from other institutions, credit assigned to the successful completion of elective courses

under the pass-fail option, and that given in recognition of successful advanced placement (see p. 51). In order to carry forward such credit, two quality points are assigned per semester hour. No grade is entered on a student's permanent record in the case of transfer credit or APP credit. All honors at Duke are determined on the basis of the Duke cumulative average; however, the total cumulative average is the basis for determining whether continuation and graduation requirements have been met.

Trinity College and The Woman's College

In Trinity College or the Woman's College a student must achieve at least the following credits and q.p.r.'s for continuation from

The first to the second year	18 s.h. credit and a q.p.r. of 1.30
The second to the third year	42 s.h. credit and a q.p.r. of 1.60
The third to the fourth year	66 s.h. credit and a q.p.r. of 1.70
The fourth to the fifth year (if needed)	90 s.h. credit and a q.p.r. of 1.80

While the meeting of these requirements does not guarantee continuance in College, it represents the absolute minimum in the absence of which no student will be permitted to remain.

Freshmen must also pass at least six semester hours of work in their first semester, nine semester hours in the second semester, and eighteen semester hours in their first year; all other students must pass at least nine semester hours each semester. Physical education credits are excluded in each case.

Senior Class Privileges. Students who have completed 90 or more semester hours of work and have attained a quality point ratio of at least 1.80 are eligible for privileges normally accorded seniors.

Requirements for Graduation. In addition to a completion of an approved curriculum a student must meet at least the following minimum requirements: 124 semester hours with 248 quality points and a q.p.r. of 1.90. The work of the senior year must also average at least a C (2.00).

School of Engineering

A student in the School of Engineering matriculating after September 1, 1965, must achieve at least the following for continuation from

The first to the second year	18 s.h. credit and a q.p.r. of 1.30
The second to the third year	46 s.h. credit and a q.p.r. of 1.60
The third to the fourth year	74 s.h. credit.and a q.p.r. of 1.70
The fourth to the fifth year (if needed)	102 s.h. credit and a q.p.r. of 1.80

Freshmen must also pass at least six semester hours of work in their first semester, three required courses in the second semester, and eighteen

semester hours in the first year; all other students must pass at least nine semester hours each semester. Physical education credits are excluded in each case.

Senior Class Privileges. Students who have completed 96 or more semester hours of work including certain specially designated junior courses are eligible for privileges normally accorded seniors.

Requirements for Graduation. For graduation from the School of Engineering in addition to completion of an approved curriculum, a student matriculating after September 1, 1965, must meet at least the following minimum requirements: the completion of 134 semester hours; a cumulative q.p.r. of 1.90; and a q.p.r. of 2.0 in all work, as well as in all engineering work, taken after having attained senior standing.

Commencement

Degrees are awarded in June at commencement to those who have completed requirements at the end of either regular semester of the academic year. They are awarded at the end of the summer to students who complete degree requirements in a summer session.

Eligibility for Academic Honors

Dean's List. In recognition of academic achievement, students who earn an average quality point ratio of 3.0 or higher on a semester's work of not less than the minimum academic load are placed on the Dean's List.

Class Scholars. The five students in each combined undergraduate class of the University (including Trinity College, the Woman's College, and the School of Engineering) who achieve the highest quality point ratio on at least a normal course load for each academic year shall be designated Class Scholars.

Class Honors. To be eligible for Class Honors a student must earn, during the year, credit for at least the minimum academic load permitted by the college in which he is registered. Students in the freshman, sophomore, and junior classes who earn a 3.50 quality point ratio on all work for the year are eligible for Class Honors.

Graduation Honors. To be eligible for consideration for Graduation Honors a student must have completed in residence a minimum of ninety semester hours. Students who earn an average of at least a quality point ratio of 3.50 are recommended for a degree *magna cum laude*. Those who earn a quality point ratio of 3.75 are recommended for a degree *summa cum laude*.

Eligibility for Special Curricular Programs

Special Courses, Special Sections, and Tutorials for Entering Freshmen and Sophomores. Special introductory courses and special sections of introductory courses are offered to qualified entering freshmen and sophomores on a pass-fail basis. One-credit-hour tutorials are available to accompany regular introductory courses. Special sections are designated by the letter *X*; special courses, by the numbers 41, 42; tutorials, by 43, 44. In general, special sections presume background and competence in the given area of study. Tutorials, on the other hand, presume special interest and desire for additional involvement in an intellectual activity, but no special background or competence.

Reading-out of Introductory Courses. The option to "read" in order to by-pass introductory or pre-requisite courses is open to students of demonstrated academic ability to allow them to advance at their own pace to upper-level work. This opportunity ensures a richer program for the student who has few places in his curriculum for electives. Any student interested in reading during the summer to by-pass an introductory or pre-requisite course must be recommended by his dean and secure the permission of the department concerned. Reading for a course and auditing are mutually exclusive procedures. A proposed program of reading should be approved by the Director of Undergraduate Studies in the department in which the work will be done. On passing a three-hour qualifying examination prepared by the department a student may be certified for advanced course work in the area. On completion of an advanced course, an entry will be made on his permanent record that he has passed a qualifying examination but no course credit is awarded. Interested students should request further information from their respective dean's offices.

Independent Study. Upon the recommendation of the department involved, students may be permitted to enroll for independent study during their junior and senior years. The courses, numbered 191, 192 and 193, 194, are designed to permit students to pursue individual research and reading in a field of special interest subject to the supervision of a member of the staff. A student need not be in a Graduation with Distinction program to enroll in independent study courses. The maximum credit allowed for independent study and honors research courses is three semester hours per semester during the junior year and six semester hours per semester during the senior year. Interested students should consult the Director of Undergraduate Studies in the department in which they wish to work.

Graduation with Distinction. Programs featuring independent study and other honors opportunities are available under the title Graduation with Distinction in the majority of the academic departments. Although the details and requirements of the program vary from department to

department, certain general requirements are uniform. Students are invited to participate by the department at the end of the junior year. A "B" average is normally required for entrance to the Program, but students may be included who do not have a "B" average when admitted. They must, however, achieve a "B" average in their major department and an over-all "B" average by the time of graduation to be eligible. After participation in a senior seminar, and/or a directed course of reading, laboratory research, or other independent study, the student must embody the results of his individual research and study in a distinguished piece of writing. The paper is assessed by a departmental committee which, if it approves, recommends that the student be Graduated with Distinction in his major field. Interested students should consult the Director of Undergraduate Studies in the appropriate department.

Distinguished Professor Seminars. Interdisciplinary one-semester seminars of restricted enrollment offered to upperclassmen will be led by senior members of the faculty, usually holders of named chairs. Professors and topics are announced under the title *University Courses.* (See page 179.) Because of their scope, the seminars lie outside any particular major though a department may, at its discretion, accept one or more of them as related work. Each carries three semester hours credit.

Juniors and seniors with overall averages of at least 2.75 who meet prerequisites listed for particular seminars may apply for a seminar through the Dean of their College. Preference is given to juniors and to those not enrolled in a senior honors seminar. The selection of seminar groups is made by the moderators.

Conduct of Students

Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct.

The University wishes to emphasize its policy that all students are subject to the rules and regulations of the University as currently in effect or from time to time put into effect by the appropriate authorities of the University.

Any student, in accepting admission, indicates his willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the University.

Courses of Instruction

Note. Courses primarily for freshmen are numbered from 1 to 49; those primarily for sophomores are numbered from 50 to 99; those primarily for juniors and seniors from 100 to 199; those primarily for seniors and graduates from 200 to 299. The amount of credit for each course is specified in semester hours following the listing of the course. For a description of each course, consult the *Bulletin of Undergraduate Instruction.*

Odd-numbered courses are usually offered in the fall semester; even-numbered courses in the spring semester. *For courses which will be offered in 1968-69, consult the Official Schedule of Courses available to enrolled students in the Registrar's Office.*

Double numbers separated by a hyphen indicate that the course is a year-course and must normally be continued throughout the year if credit is received. A student must secure written permission from the instructor in order to receive credit for either semester of a year-course. Double numbers separated by a comma indicate that although the course is a year course, credit may be received for either semester without special permission.

Air Force Aerospace Studies

Professor Stanley, Lt. Colonel, USAF, *Chairman*; Associate Professor Thompson, Major, USAF, *Director of Undergraduate Studies,* Assistant Professor Canterbury, Captain, USAF, *Commandant of Cadets*

Eligibility Requirements. Freshmen enrolled in Trinity College and the School of Engineering are eligible to enroll in the General Military Course in the Air Force ROTC. For enrollment in the Professional Officer Course the student must have successfully completed either the General Military Course or the six weeks Field Training Course; must execute a written agreement with the government to complete the Professional Officer Course; must be sworn into the Enlisted Reserve; and he must agree to accept a commission in the United States Air Force Reserve upon graduation.

Deposit Required. Each student must make a deposit of twenty dollars with the University Treasurer to insure return of all Government Property.

Course of Study. The course of study of AFROTC is composed of courses in the Department of Air Force Aerospace Studies. In addition to classroom instruction, the Air Force requires Leadership Laboratory each semester.

General Military Courses

First Year

AS 1. *Leadership Laboratory.*
AS 2. *Defense of the United States.* 2 s.h. Canterbury

Second Year

AS 51. *World Military Systems.* 2 s.h. Canterbury
AS 52. *Leadership Laboratory.*

Professional Officer Courses

All students selected to continue Aerospace Studies pursue:

First Year

AS 101, 102. *Growth and Development of Aerospace Power.* Leadership Laboratory required. 6 s.h. Stanley

Second Year

AS 203. *The Problems of Flight and the Aerospace Sciences of Weather and Navigation.* For pilot and navigator cadets, elective for all others. 2 s.h. Thompson

AS 205, 206. *The Professional Officer.* Leadership Laboratory required. 6 s.h. Thompson

Art

Professor Heckscher, *Chairman*; Associate Professor Jenkins, *Director of Undergraduate Studies*; Adjunct Professor Bier; Professors Hall, Markman, and Patrick, Associate Professors Sunderland and Mueller; Lecturers Meyvaert, Moeller and Stars; Instructor Pratt

Aesthetics

121. *The Principles of Art Criticism.* 3 s.h. Patrick
221-222. *History of Aesthetics.* 6 s.h. Patrick

History of Art

51-52. *Introduction to Art History.* 6 s.h. Staff
131. *Art and Archaeology of the Hellenic World.* Not open for credit to students who have taken Classical Studies 141. 3 s.h. Markman
132. *Roman Art and Archaeology.* Not open for credit to students who have taken Classical Studies 142. 3 s.h. Markman
133. *Mediaeval Architecture.* 3 s.h. Sunderland
134. *Mediaeval Painting and Sculpture.* 3 s.h. Sunderland
135, 136. *Art of Northern Europe in the Fifteenth & Sixteenth Centuries.* 6 s.h. Mueller
137, 138. *Italian Renaissance Art.* 6 s.h. Jenkins
140. *Seventeenth Century Painting and Sculpture in Europe.* 3 s.h. Jenkins
141. *American Art.* 3 s.h. Patrick
143. *The History of Prints and Drawings.* 3 s.h. Mueller
144. *Renaissance and Baroque Architecture.* 3 s.h. Sunderland
145-146. *The Rise of Contemporary Architecture.* Seniors graduating at midyear may receive credit for 145, which is otherwise prerequisite to 146. 6 s.h. Hall
147. *Painting and Sculpture in the Eighteenth and Nineteenth Centuries.* 3 s.h. Sunderland
148. *Modern Painting and Sculpture.* 3 s.h. Patrick
191, 192. *Independent Study.* Open only to qualified juniors, by permission of the Department. 6 s.h.
193, 194. *Independent Study.* Open only to qualified seniors, by permission of the Department. 6 s.h.

For Seniors and Graduates

217. *Aegean Art.* 3 s.h. Markman
218. *Early Greek Art.* 3 s.h. Markman
233. *Early Mediaeval Architecture.* 3 s.h. Sunderland

234. *Romanesque Sculpture.* 3 s.h. Sunderland

239. *Architecture of Britain.* 3 s.h. Hall

240. *Architecture of North America.* 3 s.h. Hall

241, 242. *Latin American Art.* Open to seniors who have a reading knowledge of Spanish or have had courses in Latin American history, economics, or literature. 6 s.h. Markman

249. *Pre-Columbian Art.* 3 s.h. Markman

251, 252. *Research.* Open to seniors by permission of Director of Undergraduate Studies. 6 s.h. Heckscher

292. *Research Problems in the Collections of the North Carolina Museum of Art.* Permission of Director of Undergraduate Studies required. 3 s.h. Bier

Design

Students other than art majors may receive not more than eight semester hours credit for work in studio courses. For any number of semester hours of credit in studio courses and equal number of hours must be taken in History and Criticism.

53-54. *Beginning Studio.* 4 s.h. Pratt

55, 56. *Painting.* Prerequisite: Art 53-54 or consent of the instructor. 4 s.h. Pratt

155, 156. *Advanced Drawing and Color.* Prerequisite: Art 53-54. 4 s.h. Pratt

157, 158. *Advanced Painting.* Prerequisite: 55, 56. 4 s.h. Pratt

159, 160. *Printmaking.* Prerequisite: 53-54. 4 s.h. Mueller

Departmental Major in Art

Prerequisite. Introduction to Art History (1-2 or 51-52); or, with the approval of the Director of Undergraduate Studies, equivalent hours in 100 level courses which form a background for the History of Art.

Major Requirements. The student will select in consultation with the departmental adviser a sequence of courses emphasizing either the History of Art or Design.

a. History of Art: 24 semester hours from 100 and 200 level courses distributed over the entire field of Art History, with a concentration of courses in at least two areas.

b. Design: 22 semester hours, of which 16 must be in Design and 6 from courses in the History of Art and Theory.

Related Work. 18 semester hours elected from courses in aesthetics, anthropology, English, German, classical studies, history, history of music, history of religion, linguistics, philosophy, psychology, romance languages, and sociology.

The Department offers work leading to graduation with distinction. See the Section on honors in this *Bulletin*.

Studio Fees. A fee of $15.00 per semester will be required in all studio courses to cover materials used in each course. The fee is payable upon notification from the Treasurer's Office at the beginning of each semester.

Asian Languages

Chinese

131, 132. *Intensive Elementary Chinese.* 8 s.h. Chang
133, 134. *Intensive Intermediate Chinese.* 8 s.h. Chang

Hindi-Urdu

171, 172. *Modern Indian Literature.* 6 s.h. Swan
181, 182. *Intensive Elementary Hindi-Urdu.* 8 s.h. Swan
183, 184. *Intensive Intermediate Hindi-Urdu.* Prerequisite: Elementary Hindi-Urdu. 8 s.h. Apte
185, 186. *Advanced Hindi Reading and Composition.* Prerequisite: Hindi-Urdu 183, 184, or equivalent. 6 s.h. Swan or Staff
200, 201. *Special Studies in South Asian Languages.* Prerequisite: consent of instructor. 6 s.h. Swan and Staff

These courses are offered as an enrichment program for students interested in the South Asian subcontinent and may be taken as general electives by advanced undergraduate students. No major work is offered in Hindi-Urdu.

Japanese

151, 152. *Intensive Elementary Japanese.* 8 s.h. Chang
153, 154. *Intensive Intermediate Japanese.* 8 s. h. Chang

Biology

1-2. *Biology.* 8 s.h. Staff
See other courses listed under Botany and Zoology.

Botany

Professor Johnson, *Chairman*; Assistant Professor White, *Director of Undergraduate Studies*; Associate Professor Stone and Assistant Professor

White, *Supervisors of Freshman Instruction*; Professors Anderson, Billings, Hellmers, Kramer, Naylor, Oosting, and Perry; Associate Professors Culberson, Philpott, and Wilbur; Assistant Professor Searles

1-2. *Biology.* (See course listing under Biology 1-2.)

52. *Plant Identification.* 4 s.h. Wilbur

53. *Introductory Oceanography.* Prerequisite: one year of a laboratory science or concurrent enrollment in a laboratory science. (Also listed as Geology 53.) 3 s.h. Pilkey (Geology) and Searles

55. *Plant Anatomy.* Prerequisite: one year of biology or permission of instructor. 4 s.h. White

101. *Principles of Heredity.* Prerequisite: one (high-school or college) course in biology, botany, or zoology. High-school algebra or one year of college mathematics recommended. 3 (without laboratory) or 4 s.h. Perry

103. *General Bacteriology.* Prerequisite: one year of biology or chemistry or equivalent. 4 s.h. Johnson

105. *Plant Morphology.* Prerequisite: one year of biology. 4 s.h. Culberson

151. *Introductory Plant Physiology.* Prerequisite: Biology 1-2 or equivalent; one year of chemistry. 3 s.h. Hellmers and Kramer

156. *Plant Ecology.* Prerequisites: Biology 1-2 and Botany 52, or equivalent. 4 s.h. Billings

191, 192, 193, 194. *Independent Study.* Open only to highly qualified juniors and seniors by permission of the Department. 6. s.h.

202. *Genetics.* Prerequisites: one year of biology or equivalent, and one year of college mathematics. 4 s.h. Perry

209. *Lichenology.* 3 s.h. Culberson

210. *Bryology.* 3 s.h. Anderson

212. *Phycology.* 3 s.h. Searles

221. *Mycology.* Prerequisite: one year of biological science. 4 s.h. Johnson

225, 226. *Special Problems.* Students with adequate training may do special work in the following fields: (1) *Mycology*, (2) *Cytology*, (3) *Ecology*, (4) *Genetics*, (5) *Morphology and Anatomy of Vascular Plants*, (6) *Bryology*, (7) *Physiology*, (8) *Taxonomy of Vascular Plants*, (9) *Bacteriology*, (10) *Lichenology*, (11) *Phycology*. Consult the *Bulletin of Undergraduate Instruction* for staff supervisors.

240. *Evolution.* Prerequisites: introductory biology and genetics, or consent of instructors. Cytology recommended. 3 s.h. Klopfer (Zoology) and Stone

243. *Cytology.* Prerequisite: one year of botany or zoology. (Also listed as Zoology 243.) 4 s.h. Anderson and Nicklas (Zoology)

250. *Plant Biosystematics.* Prerequisites: Botany 52 and 55 and either 243 or a course in genetics or their equivalents. 4 s.h. Stone and White

252. *Plant Metabolism.* Prerequisite: Botany 151 or equivalent; organic chemistry recommended. 4 s.h. Naylor

254. *Plant Water Relations.* Prerequisite: Botany 151 or equivalent. 3 s.h. Kramer

255. *Plant Systematics.* Prerequisite: Botany 52 or equivalent. 4 s.h. Wilbur

256. *Community Analysis and Classification.* Prerequisite: Botany 156 or equivalent. 3 s.h. Oosting

257. *Principles of Plant Distribution.* Prerequisite: Botany 156 or equivalent. 3 s.h. Billings

258. *Physiology of Growth and Development.* Prerequisite: Botany 151 or equivalent; organic chemistry recommended. 4 s.h. Naylor

259. *The Environment.* Prerequisite: Botany 156 or equivalent. 3 s.h. Billings

Marine Laboratory. Botany 211, *Marine Algae*, and 207, *Marine Mycology*, are given alternate years at the Duke University Marine Laboratory, Beaufort, N. C.; Botany 220, *Coastal Field Botany*, is offered biennially. Consult the *Bulletin of the Marine Laboratory.*

Departmental Major

Prerequisites. Biology 1 and 2.

Major Requirements. A minimum of 24 hours (A.B. and B.S.) of work beyond Biology 1 and 2, including at least four of the following courses: Botany 52, 55, 105, 101, 151, and 156. The remaining hours may be selected from these and any other courses in the Department for which the student is eligible, subject to approval of the Director of Undergraduate Studies.

Related Work. Courses in at least two natural science departments sufficient to total, with major work, 42 s.h. (A.B.) or 48 s.h. (B.S.)

Business Administration

Professor Volpp, *Chairman*; Professor Keller, *Director of Undergraduate Studies*; Professors Black, Dickens, Joerg; Associate Professor Baligh, Visiting Associate Professor Windham; Assistant Professor L. Pondy; Visiting Assistant Professor (part-time) Upchurch; Instructors (part-time) Brooks, D. Pondy, Shannon, Wright

The courses offered by the Department of Business Administration stress conceptual understanding of and analytical reasoning related to problems faced by modern business management. The Department offers two options for majors. The Business Administration option is designed to provide the student with an understanding of the problems of a complex industrial society. The Accounting option is planned to introduce the

student to the problems of information processing for control and decision-making within the firm and by external investors. Both of these majors are offered in the spirit of a liberal undergraduate program.

The Department offers sufficient work for those students who wish to qualify for admission to the Certified Public Accountants' Examination.

A suggested course of study, within the department for those wishing professional preparation is presented on pages 10-11. Careful planning of the course of study is advised for those choosing to prepare themselves for the profession of accountancy.

57. *Principles of Accounting I.* 3 s.h.

58. *Principles of Accounting II.* Prerequisite: Bus. Adm. 57. 3 s.h.

101. *Managerial Economics.* Prerequisite: Bus. Adm. 138. 3 s.h.

138. *Business Statistics.* Prerequisite: Mathematics 21 recommended. May be taken concurrently with Economics 52. 3 s.h.

143. *Corporation Finance.* Prerequisite: Bus. Adm. 57 and 101. 3 s.h.

144. *Investments.* Prerequisites: Bus. Adm. 143. 3 s.h.

149. *Marketing.* Prerequisite: Bus. Adm. 101. 3 s.h.

171. *Accounting Theory.* Prerequisite: Bus. Adm. 58. 3 s.h.

172. *Corporate Accounts.* Prerequisite: Bus. Adm. 171. 3 s.h.

173, 174. *Auditing, Theory and Practice.* Prerequisite: Bus. Adm. 171, 172 and permission of the department. 6 s.h.

177. *Income Tax Accounting.* Prerequisite: completion of or registration for Bus. Adm. 171, 172. 3 s.h.

181. *Business Law.* 3 s.h.

182. *Business Law.* 3 s.h.

184. *Commercial Law for Accountants.* For seniors. Permission of the instructor required. 1 s.h.

185. *Business Administrative Organization.* Prerequisite: Bus. Adm. 101. 3 s.h.

188. *Personnel Management.* 3 s.h.

190. *Quantitative Methods in Business.* 3 s.h.

191. *Independent Study.* Approval of the instructor and the Director of Undergraduate Studies required. 3 s.h. Staff

193, 194. *Independent Study.* Same as 191 but for seniors. 6 s.h. Staff

199. *Senior Seminar.* Permission of the department required. 3 s.h.

275, 276. *Advanced Industrial Accounting and Management.* Prerequisites: Bus. Adm. 171, 172 and permission of the department. 6 s.h.

279. *Budgeting and Control.* 3 s.h.

291. *Business Policy.* Prerequisites: all Bus. Adm. requirements. 3 s.h.

295, 296. *Advanced Accounting Seminar: Theory and Practice.* Prerequisites: Bus. Adm. 171, 172 and permission of the department. *(Those who do not wish credit may take Bus. Adm. 295, 296 for $25.00 per semester.)* 6 s.h.

Departmental Major

The Department of Business Administration offers specialization in two areas—Accounting and Business Administration. Each program requires that the student take the same prerequisite courses in the Freshman and Sophomore years.

Prerequisites required of all majors in the Department. Mathematics 17 or 21 (preferably Mathematics 21); Economics 1 or 51 and 52; Business Administration 57, 58, 101, and 138.

Business Administration

Required courses. Business Administration 143, 149, 185, 291.

Accounting

Required courses. Business Administration 171, 172, 173, 275.

Related Work. 18 s.h. Departments in which related work is usually taken: Mathematics, Economics, Sociology, Psychology, Political Science, History. In special cases courses taken in other departments may be counted as related work with the approval of the Department.

The Department offers work leading to graduation with distinction. See the section on Honors. (For information about the Honors work, contact the Director of Undergraduate Studies.) The Department recommends majors for several scholarships designated by the donors for students majoring in business administration.

Chemistry

Professor Bradsher, *Chairman*; Associate Professor Bonk, *Director of Undergraduate Studies*; Professors Brown, Hill, Hobbs, Krigbaum, Poirier, Quin, and Wilder; Associate Professors Chesnut, Jeffs, and Smith; Assistant Professors Henkens, Palmer, Toren, and Wells; and Assistants

1, 2. *General Inorganic Chemistry.* Chemistry 1 is a prerequisite for Chemistry 2. Prerequisite: qualification for Math 21. 8 s.h. Bonk, Staff, and Assistants

41, 42. *Advanced General Chemistry.* Credit *not* awarded for both Chemistry 2 and 42 nor for both 42 and 61. Prerequisites: Mathematics 21 (may be taken concurrently) and permission of instructor. For Chemistry 42, Chemistry 41 is a prerequisite; invitations to Chemistry 42 may be extended to students with excellent records in Chemistry 1. 8 s.h. Strobel and Wilder

61. *Physical Chemistry of Aqueous Solutions.* Prerequisites: Chemistry 1, 2, and Mathematics 21. 4 s.h. Wilder, Jones, Poirier, Toren, and Assistants

70. *Quantitative Analysis.* Not open to B.S. Chemistry majors. Prerequisite: Chemistry 42 or 61. 4 s.h. Toren, Wells and Assistants

132. *Quantitative and Instrumental Analysis.* Prerequisites: Chemistry 161, 162, the latter half of which may be taken concurrently. 4 s.h. Toren

151, 152. *Organic Chemistry.* Prerequisite: Chemistry 42 or 61. Chemistry 151 is prerequisite for 152. 8 s.h. Bradsher, Miss Brown, Jeffs, Quin, and Assistants

155. *Qualitative Organic Analysis.* Prerequisite: Chemistry 152. 4 s.h. Quin

160. *Elements of Theoretical Chemistry.* Credit is not given for both 160 or 161 and 162. Prerequisites: Chemistry 70, Physics 41-42, and Mathematics 22. 4 s.h. Smith

161, 162. *Physical Chemistry.* Prerequisites: Chemistry 42 or 61, Physics 41-42, and Mathematics 63. 8 s.h. Hobbs

191, 192. *Independent Study.* Open only to highly qualified students by permission of the department. Prerequisite: Chemistry 271

216. *Nuclear Chemistry.* Prerequisites: Chemistry 70 or 132, 152, and Physics 41-42. 3 s.h. Hill

217. *Inorganic Chemistry.* Prerequisite: Chemistry 162 or the permission of the Director of Undergraduate Studies. 3 s.h. Wells

234. *Chemical Instrumentation.* Prerequisite: Chemistry 132, which may be taken concurrently, or an equivalent course. 3 s.h. Strobel

235. *Advanced Analytical Chemistry.* Prerequisite: Chemistry 132 and 162. 3 s.h. Toren

252. *Advanced Organic Preparations.* Prerequisite: Chemistry 152. 3 s.h. Brown

253. *Intermediate Organic Chemistry.* Prerequisite: Chemistry 152 and permission of the Director of Undergraduate Studies. 3 s.h. Quin and Wilder

255. *Structural Analysis by Spectroscopic Methods.* Prerequisites: Chemistry 152 and permission of the Director of Undergraduate Studies. 2 s.h. Jeffs

263. *Thermodynamics.* Prerequisites: Chemistry 162 and permission of the Director of Undergraduate Studies. 3 s.h. Krigbaum

267. *Introductory Quantum Chemistry.* Prerequisites: Chemistry 162 and permission of the Director of Undergraduate Studies. 3 s.h. Jones

271. *Introduction to Research.* 1 s.h. Miss Brown

275-276. *Research.* Open to seniors by permission of the Director of Undergraduate Studies. 1 to 3 s.h. Staff

281. *Laboratory in Organic Chemistry.* Prerequisites: Chemistry 152 and permission of the Director of Graduate Studies. 2 s.h. Quin

Departmental Major

For the degree of A.B.

Prerequisites. Chemistry 1 and 2 (or 41), Mathematics 21, 22.

Major Requirements. 22 s.h., including Chemistry 61 (or 42), 70, 151,

152, and an additional 6 to 8 s.h., which may be satisfied by 161-162 or 160 together with 155 or 3 s.h. selected from 200-level courses in Chemistry.

Related Work. 20 s.h., including Physics 41-42 with the remainder usually in botany, geology, mathematics, physics or zoology.

For the degree of B.S.

Prerequisites. Chemistry 1 and 2 (or 41), Mathematics 21, 22, 63.

Major Requirements. Chemistry 61 (or 42), 132, 151, 152, 155, 161, 162, 217, and 3 s.h. selected from 200-level courses in Chemistry.

Related Work. 18 s.h., including Physics, 11 s.h. and Mathematics 51, or 64 or 131.

The language requirements must be satisfied by German 64 and either French 2 or Russian 2.

The department offers work leading to graduation with distinction. Consult the section on Honors and Prizes in this *Bulletin*.

Classical Studies

Professor Richardson, *Chairman*; Assistant Professor Stanley, *Director of Undergraduate Studies*; Professors Newton, Truesdale, and Willis; Associate Professors Oates and Womble

Greek

1-2. *Elementary Greek.* 6 s.h. Willis

63-64. *Intermediate Greek.* 6 s.h. Truesdale

97, 98. *Sight Reading in Greek Prose.* Open to students who have completed one year of college Greek or the equivalent, with consent of the instructor. 2 s.h. Truesdale

103. **Greek Historians.* 3 s.h.

104. **Greek Orators.* 3 s.h. Truesdale

105, 106. **Homer and the Greek Lyric.* 6 s.h. Truesdale

107, 108. **Greek Tragedy and Comedy.* 6 s.h.

117. **Greek Prose Composition.* 2 s.h. Truesdale

191, 192. *Independent Study.* Open only to highly qualified juniors and seniors. 6 s.h. Staff

For Seniors and Graduates

203. **Homer.* 3 s.h. Stanley

205. **Greek Lyric Poets.* 3 s.h. Truesdale

206. **Aeschylus.* 3 s.h. Willis

*Courses indicated by an asterisk will not be offered in 1968-69.

208. **Sophocles.* 3 s.h. Willis
209. *Euripides.* 3 s.h. Stanley
210. **Aristophanes.* 3 s.h. Truesdale
221. **Early Greek Prose.* 3 s.h. Willis
222. *Thucydides.* 3 s.h. Willis
223. **Greek Orators I.* 3 s.h.
224. **Greek Orators II.* 3 s.h.
225. *Plato.* 3 s.h.
231. *Hellenistic Poetry.* 3 s.h. Stanley
241. *Advanced Prose Composition.* 1 s.h. Willis

Latin

1-2. *Elementary Latin.* 8 s.h. Womble
63. *Intermediate Latin: Cicero.* Prerequisite: Latin 1-2 or the equivalent. (Open to students offering 3 units of school Latin and students offering 2 units of school Latin with a record satisfactory to the department.) 4 s.h. Staff
64. *Intermediate Latin: Vergil.* 4 s.h. Staff
91, 92. *Latin Prose and Poetry.* 6 s.h. Richardson, Newton, and Womble
93. **Roman Comedy.* 3 s.h.
94. **The Roman Novel.* 3 s.h.
95. *Roman Stoicism.* 3 s.h.
96. *Roman Epicureanism.* 3 s.h.
97, 98. *Sight Reading in Classical, Mediaeval, and Renaissance Latin.* Open to students enrolled in other courses in Latin only on the recommendation of their instructors. 2 s.h. Staff
107. *Roman Elegy: Propertius and Tibullus.* 3 s.h. Newton
108. *Ovid.* 3 s.h. Womble
109. **The Roman Historians: Caesar and Sallust.* 3 s.h.
110. **The Roman Historians: Livy and Tacitus.* 3 s.h.
117. *Latin Prose Composition.* 2 s.h. Staff
191, 192. *Independent Study.* Open to highly qualified juniors and seniors. 6 s.h. Staff

For Seniors and Graduates

201. **The Verse Treatise.* 3 s.h. Newton
202. *Roman Satire.* 3 s.h. Womble
203. **Epic: Vergil.* 3 s.h. Richardson
204. **Epic: Lucan and Statius.* 3 s.h. Richardson
207. *The Prose Epistle.* 3 s.h. Richardson
208. *The Epistle in Verse.* 3 s.h. Womble
209. *Fragments of Early Latin.* 3 s.h. Stanley
210. **Lyric and Occasional Poetry.* 3 s.h. Womble

211. **Roman Oratory I.* 3 s.h.
212. **Roman Oratory II.* 3 s.h.
221. *Mediaeval Latin I.* 3 s.h. Newton
222. *Mediaeval Latin II.* 3 s.h. Newton
241. **Advanced Latin Composition.* 1 s.h. Richardson

Classical Studies

Courses on the 100-level are open to juniors and seniors, and to qualified sophomores by permission of the instructor.

15. **Mythology.* Open primarily to freshmen. 3 s.h. Truesdale
111, 112. *Roman Literature in English Translation.* 6 s.h.
121, 122. *Greek Literature in English Translation.* 6 s.h. Truesdale
129. *Greek History.* 3 s.h. Oates
132. *Roman History.* 3 s.h. Oates
141, 142. *Classical Art and Archaeology.* Not open to students who have had Art 131, 132. 6 s.h. Stanley

For Seniors and Graduates

231. **Greek Sculpture.* 3 s.h. Stanley
232. *Greek Painting.* 3 s.h. Stanley
235. *Roman Architecture.* 3 s.h. Richardson
236. **Roman Painting.* 3 s.h. Richardson
253. **Greece to the Orientalizing Period.* 3 s.h.
254. **The Age of the Tyrants and the Persian Wars.* 3 s.h.
255. *The Age of Pericles.* 3 s.h. Oates
256. *The Fourth Century through Alexander.* 3 s.h. Oates
257-258. **Social and Cultural History of the Ancient World.* 6 s.h.
260. **The History of Rome to 146 B.C.* 3 s.h.
261. **The Roman Revolution, 164-30 B.C.* 3 s.h.
262. **Rome under the Julio-Claudians.* 3 s.h.
263. **From the Flavian Dynasty to the Severan.* 3 s.h.

Departmental Major in Greek

Prerequisite. Greek 1-2 or equivalent.

Major requirements. 24 semester hours in courses in Greek, to be selected from 63-64 and courses numbered above 100; at least 6 hours of work must be taken in courses at the 200-level. Students will be required to pass an examination testing proficiency in Greek prose composition or to complete Greek 117.

Related work. 18 semester hours, including at least 6 hours of Latin, and 12 hours of suitable courses in archaeology, ancient and mediaeval history, Linguistics, French, German, or philosophy.

Departmental Major in Latin

Prerequisite. Latin 91, 92.

Major requirements. 24 semester hours in courses of Latin, which must include 12 semester hours in courses among those numbered 93-96 and those at the 100-level, and 12 semester hours in courses at the 200-level. Students will be required to pass an examination testing proficiency in Latin Composition or to complete Latin 117.

Related work. 18 semester hours, including at least 6 hours of Greek, and 12 hours of suitable courses in archaeology, ancient and mediaeval history, Linguistics, French, German, or philosophy.

Majors in either Greek or Latin who contemplate graduate work are reminded of the necessity for competence in both languages for all higher degrees and of the requirement for a reading knowledge of French and German (usually an examination in one of these languages must be passed in the first year of graduate work and an examination in the other the second year).

Majors in Greek and Latin are eligible for nomination to a term of one semester during their junior year at the Intercollegiate Center for Classical Studies in Rome, of which Duke University is a founding member, at a cost comparable to that of a semester at Duke. Financial arrangements are made through the University, and students may apply for scholarship assistance. Courses in Greek, Latin, Ancient History, and Archaeology taken at the Center are counted toward the degree requirements of the Department of Classical Studies. For further information, see pages 28-29.

Graduates of Duke University may attend the American School of Classical Studies at Athens, Greece, without charge for tuition and are eligible to compete for the fellowships offered annually by the School. These consist of two fellowships in Greek archaeology and one in the language, literature, and history of ancient Greece, each with a stipend of $2,500. They are awarded mainly on the basis of examinations held in the beginning of February of each year. A somewhat similar connection exists with the American Academy in Rome.

Comparative Literature

The courses in Comparative Literature may be taken as electives by advanced students; certain courses serve as related work in several departments (see the entries for related work under the separate departments).

No major is now offered in Comparative Literature. Students interested in the study of the interrelationships of literature as a part of their undergraduate program, or as preparation for graduate work, should consult Dr. Salinger.

191, 192. *Independent Study.* Open only to qualified juniors by permission. 6 s.h. Salinger

193, 194. *Independent Study.* Open only to qualified seniors by permission. 6 s.h. Salinger

201, 202. *Romanticism.* 6 s.h. Salinger

203, 204. *Realism and Symbolism.* 6 s.h. Salinger

205. *Foundations of Twentieth-Century European Literature.* 3 s.h. Salinger

For the following courses see the departmental listing.

Readings in European Literature. (English 153, 154) Clubbe

Modern European Drama. (English 155) Reardon

Readings in Scandinavian Literature. (English 159) Anderson

The European Epic Tradition. (English 167, 168) Knight

Religious Values in Classical and European Literature. (Religion 187) Kort

Russian and Polish Romanticism. (Slavic Languages 236) Krynski

Economics

Professor Smith, *Chairman;* Professor Kreps, *Director of Undergraduate Studies;* Professors de Vyver, Davies, Hanna, McGee, Rottenberg, Saville, Spengler and Yohe; Associate Professors Blackburn, De Alessi. Goodwin, Naylor and Treml; Assistant Professors Clark, Condos, Finger, Gillis, Reed and Vernon

Economics courses aim to develop in the student the critical and analytical skills essential for understanding economic problems and institutions, in both their contemporary and in their historical setting. While no particular vocational or professional goal is emphasized, these courses provide the academic background necessary for positions in industry, for work in many branches of government service, and for graduate study in economics and the social sciences.

Economics 1 or 51 and 2 or 52 are recommended to all students planning to elect further courses in the department.

1. *Introduction to Economic Problems and Policies.* Open only to freshmen. 3 s.h. Staff

2. *The Evolution of Economic Ideas.* Open only to freshmen. 3 s.h. Staff

51. *Principles of Economics.* 3 s.h. Staff

52. *Principles of Economics.* 3 s.h. Staff

109. *Economic Geography of Latin America.* 3 s.h.

114. *Economic Geography of Africa.* 3 s.h. Tuthill

115. *Fundamentals of Geography.* 3 s.h. Tuthill

120. *Economic Geography of Southern Asia.* 3 s.h. Reed

132. *The Economic History of the United States.* 3 s.h. Saville
138. *Economic Statistics.* 3 s.h. Hanna
149. *The Theory of the Firm.* 3 s.h. de Alessi, Finger, Treml
150. *Economic Thought Since Adam Smith.* 3 s.h. Goodwin
151. *Urban Geography.* 3 s.h. Reed
153. *Money and Banking.* 3 s.h. Yohe, Condos, Clark
154. *Aggregative Economics.* 3 s.h. Blackburn, Yohe, Condos
155. *Labor Problems.* 3 s.h. de Vyver, Kreps
189. *Business and Government.* 3 s.h. McGee, Vernon
201. *Senior Seminar in Economics.* For majors in Economics, with consent of the Department. 3 s.h. Staff
203. *Non-western Urbanization.* 3 s.h. Reed
204. *Advanced Money and Banking.* 3 s.h. Yohe
218. *Business Cycles.* 3 s.h. Yohe
219. *Economic Problems of Underdeveloped Areas.* 3 s.h. Rottenberg, Saville, and Spengler
231. *Economic History of Europe.* 3 s.h. Smith
233. *State and Local Finance.* Prerequisite: Economics 287 or consent of instructor. 3 s.h. Gillis
237, 238. *Statistical Methods.* Prerequisite: Economics 138 or consent of the instructor. Either semester may be taken for credit. 6 s.h. Hanna
243. *Econometrics I.* 3 s.h. Naylor
244. *Econometrics II.* 3 s.h. Naylor
257. *Dynamics of the Labor Movement.* 3 s.h. Kreps
262. *Trade Unionism and Collective Bargaining.* 3 s.h. de Vyver
265. *International Trade and Finance.* 3 s.h. Finger and Clark
268. *Competition and Monopoly.* 3 s.h. McGee
286. *Latin American Economics.* 3 s.h. Smith
287. *Public Finance.* 3 s.h. Davies and Gillis
293. *Soviet Economic History.* 3 s.h. Treml
294. *Soviet Economic System.* Prerequisite: Economics 293 or permission of instructor. 3 s.h. Treml

Departmental Major

Courses required of all majors in the Department. Mathematics 17 or 21. Economics 1 or 51 and 2 or 52. Business Administration 57.

Number of hours needed: 21 s.h. in addition to Economics 1 or 51 and 2 or 52 and Business Administration 57.

Required courses. Economics 138, 149, 154.

Elective courses. Any 12 hours selected from the Departmental course offerings. Business Administration 143 and 190 may also be offered to meet the Elective requirement.

Related work. 18 s.h. Departments in which related work is usually

taken: Mathematics, Business Administration, Sociology, Psychology, Political Science, and History. In special cases courses taken in other departments may be counted as related work with the approval of the Department and the dean.

The Department offers work leading to graduation with distinction. See the section on Honors.

Education

Professor Cartwright, *Chairman*; Professor Stumpf, *Director of Undergraduate Studies*; Professors Bolmeier, Cartwright, Githens, Hopkins, Hurlburt, Petty, and Shuman; Associate Professors Anastasiow, Ballantyne, Colver, Gehman, Charles B. Johnson, Katzenmeyer, Martin, Spaulding, Sublett, and Weitz; Assistant Professors Carbone, Di Bona, Joseph C. Johnson; Lecturer Engelhart

Courses in the Department of Education are designed for two groups of students: (1) students who have definitely chosen teaching as their life work or others with teaching experience, and (2) students who desire to study the school as a unique social institution.

Students who expect to teach in the public schools should plan their courses in accordance with the general regulations set forth under Teaching. Students who intend to teach in elementary schools should advise with Professors Petty, Sublett, or Stumpf; those intending to teach in secondary schools should advise with Professors Cartwright, Githens, C. B. Johnson, Shuman, or Stumpf. Students should confer with these advisers prior to registration each semester.

Students who do not expect to teach but desire an understanding of the school as part of a liberal education are advised to elect such courses as Education 100, 113, 114 for their introductory work in the Department and then to elect further work in accordance with their special interests.

68. *Mental Hygiene.* Not open to students who have had Psychology 115. 3 s.h. Gehman

100. *Social and Philosophical Foundations of Education.* This course or Education 113 is required of all who intend to practice teach and of all majors in Education. 3 s.h. Carbone, C. B. Johnson, Martin, Stumpf, and Sublett

101. *Elementary Education: Principles.* Required in the elementary-education major. 2 s.h. Petty, Sublett

102. *Elementary Education: Practice.* Required in the elementary-education major. Prerequisites: 2.0 average over-all and in the elementary school and/or consent of the instructor. 6 s.h. Petty and Sublett

105. *Elementary Education: Reading.* Required in the elementary-education major. 2 s.h. J. C. Johnson

106. *Elementary Education: Language Arts.* Required in the elementary-education major. 2 s.h. J. C. Johnson

107. *Elementary Education: Arithmetic.* Required in the elementary-education major. 2 s.h. Petty

108. *Elementary Education: Science.* Required in the elementary-education major. 2 s.h. Githens

113. *History of American Education.* 3 s.h. C. B. Johnson

114. *History of Education in European Culture.* 3 s.h. C. B. Johnson

118. *Educational Psychology.* Prerequisite: Psychology 91. 3 s.h. Anastasiow, Ballantyne, Gehman, Katzenmeyer

142. *Children's Literature.* 3 s.h.

151. *Public School Music Education.* Required in the elementary-education major. See Music Education 151.

152. *Public School Music Literature.* Required in the elementary-education major. See Music Education 152.

153. *Vocal Music in the Public School.* See Music Education 153.

154. *Instrumental Music in the Public School.* See Music Education 154.

161. *Integrated Art in the Public School.* Required in the elementary-education major. 2 s.h. Stars

162. *Plastic Art in the Public School.* Designed for students in elementary and secondary art education; provides credit toward the North Carolina Elementary and Secondary Teaching Certificates. 3 s.h. Stars

201. *Teaching and Supervision of Arithmetic.* Designed for teachers and supervisors in elementary schools. 3 s.h. Petty

202. *Comparative and International Education: Industrialized Nations.* 3 s.h. Di Bona

203. *Principles of School Administration.* Prerequisite: six semester hours in education. 3 s.h. Bolmeier, Hurlburt, and Stumpf

204. *The School as an Institution.* 3 s.h. Bolmeier and Martin

206. *Philosophical Analysis of Educational Concepts.* 3 s.h. Carbone

207. *Social History of Twentieth-Century American Education.* 3 s.h. C. B. Johnson

210. *Introduction to Educational Research.* 3 s.h. Engelhart, Stumpf

215. *Secondary Education: Principles.* Prerequisite: 2.0 average overall and in teaching field or fields. Must be accompanied by Education 216. *Either semester.* 3 s.h. Cartwright, Githens, C. B. Johnson, Shuman, Sublett

216. *Secondary Education: Internship.* Prerequisite: 2.0 average overall and in the major or teaching field; preparation for a teaching field and/or the consent of the instructor. *Either semester.* 6 s.h. Cartwright, Githens, Hurlburt, C. B. Johnson, Shuman, Sublett

Note: Education 215, 216, 118, and one other course, depending on the student's field, constitute a semester's work during the senior year.

217. *The Psychological Principles of Education.* 3 s.h. Gehman, Spaulding, Weitz

225. *The Teaching of History and the Social Studies.* 3 s.h. Cartwright

226. *Teaching Reading in the Elementary School.* 3 s.h. J. C. Johnson

232. *Supervision of Instruction.* 3 s.h. Hurlburt

234. *Secondary-School Organization and Administration.* 3 s.h. Bolmeier

236. *Teaching Reading in the Secondary Schools.* 3 s.h. J. C. Johnson

237. *The Teaching of Literature in Secondary School.* 3 s.h. Shuman

239. *The Teaching of Grammar, Composition, Mechanics, and Usage in Secondary School.* 3 s.h. Shuman

240. *Educational and Occupational Information.* 3 s.h. Ballantyne and Colver

241. *Principles of Guidance.* Prerequisite: 6 hours of psychology or educational psychology. 3 s.h. Colver

243. *Personality Dynamics.* Prerequisite: 6 hours of psychology or educational psychology. 3 s.h. Gehman

246. *The Teaching of Mathematics.* 3 s.h. Reynolds

253. *School Law.* 3 s.h. Bolmeier

258. *Educational Measurements.* Prerequisite: 12 semester hours in the Department, including a course in educational psychology. 3 s.h. Colver and Weitz

266. *Science in the Elementary School.* 3 s.h. Githens

276. *The Teaching of High-School Science.* 3 s.h. Githens

290. *Administration of School Property.* 3 s.h. Stumpf

Departmental Major

Undergraduate majors in Education at Duke University are offered in elementary-school education and science education.

The Department offers work leading to graduation with distinction. See the section on Honors in this *Bulletin.*

Majors in Elementary Education and Science Education

Students desiring to teach in elementary schools or in science in secondary schools should read the descriptions of these programs of study listed under the proper headings elsewhere in this *Bulletin.*

Materials and Methods Courses

Certain courses concerned with materials and methods in teaching the various subjects in the public school curriculum are listed in the proper

subject matter department. These courses are intended to give credit for teaching certificates and are recommended by the Department of Education for such credit.

Engineering

The engineering program is published separately in the *Bulletin of the School of Engineering.* Consult the Table of Contents of this General Catalogue and also the list of Annual Bulletins on the inside of the front cover.

English

Professor Ferguson, *Chairman*; Professor Williams, *Director of Undergraduate Studies*; Professor Patton and Assistant Professor Gerber, *Supervisors of Freshman Instruction*; Professors Blackburn, Bowman, Boyce, Budd, Duffey, Gohdes, Knight, Lievsay, Nygard, Reiss, Sanders, Smith, Stevenson, and Turner; Associate Professors Anderson, Bevington, Harwell, Randall, Reardon, and Wetherby; Assistant Professors Butters, Clubbe, Clum, Gerber, Jackson, Jennings, Jones, Krueger, Mellown, Michalak, Monsman, Price, Schwerman, Strandberg, and van Kluyve; Lecturers Rottenberg and Vick

1-2. *Freshman Composition.* 6 s.h.

65-66. *Imaginative Writing.* Primarily for sophomores, but in special cases open to other students. Consent of instructor required. 6 s.h.

93. *Technical Communication.* Primarily for students in Engineering. Prerequisite: English 1 and 2. 3 s.h. Harwell

100. *English for Foreign Students.* Open to all students and their wives, and to any persons and spouses with an official connection with the University. No credit. Wetherby

101. *Advanced Expository Writing.* Primarily for juniors and seniors; open also to sophomores approved by the instructor. 3 s.h. Jennings

103-104. *Narrative Writing.* Open to sophomores, juniors, and seniors. Students desiring admission to the course should present a piece of writing to the instructor as early as possible in the spring semester. Prerequisite for English 104: English 103. 6 s.h. Blackburn

Speech and Drama

51. *Essentials of Public Speaking.* Not open ordinarily to juniors and seniors. 3 s.h. Michalak, Reardon, and Schwerman

118. *Persuasive Speaking.* Prerequisite: English 51 or 151 or consent of the instructor. 3 s.h. Wetherby

119. *History of the Theater.* Primarily for juniors and seniors; open also to sophomores approved by the instructor. 3 s.h. Michalak

121. *Stagecraft.* Primarily for juniors and seniors; open also to sophomores approved by the instructor. 3 s.h. Michalak

122. *Play Production.* Primarily for juniors and seniors; open also to sophomores approved by the instructor. 3 s.h. Michalak

139. *The Speaking Voice.* 3 s.h. Schwerman and Wetherby

150. *Oral Interpretation of Literature.* For juniors and seniors; open also to sophomores approved by the instructor. 3 s.h. Schwerman

151. *Essentials of Public Speaking.* Not open for credit to students who have taken 51. 3 s.h. Michalak, Reardon, and Schwerman

152. *Argumentation.* Prerequisite: English 51 or 151 or consent of the instructor. 3 s.h. Wetherby

171, 172. *Broadcasting.* 6 s.h. Wetherby

English and American Literature and Language

55, 56. *Representative British Writers.* 6 s.h. Staff

57, 58. *Representative American Writers.* Open to juniors and seniors with the permission of the Director of Undergraduate Studies. Prospective majors should take 137, 138 instead of this course. 6 s.h. Staff

111, 112. *Eighteenth-Century Literature.* 6 s.h. Ferguson

117. *Milton.* 3 s.h. Lievsay and Price

123, 124. *Shakespeare.* 6 s.h. Bowman, Krueger, Randall, and Williams

125, 126. *English Literature, 1789-1832.* 6 s.h. Patton

127. *The English Novel From The Beginnings to 1800.* 3 s.h. Randall

128. *The English Novel in the Nineteenth Century.* 3 s.h. Monsman, and Stevenson

129. *The English Novel in the Twentieth Century.* 3 s.h. Mellown and Smith

131, 132. *English Literature, 1832-1900.* 6 s.h. Harwell

133, 134. *Twentieth-Century Poetry.* 6 s.h. Bevington

137, 138. *American Literature.* Not open for credit to students who have taken a matching semester of 57, 58. 6 s.h. Anderson, Budd, Duffey, Gerber, and Jones

140. *Medieval Literary Tradition.* 3 s.h. van Kluyve

141. *Chaucer.* 3 s.h. van Kluyve

142. *English Literature of the Middle Ages.* 3 s.h. Reiss and van Kluyve

143, 144. *English Literature: Elizabethan and Seventeenth Century.* 6 s.h. Blackburn

148. *Satire.* Prerequisite: English 55, 56. 3 s.h. Boyce

150. *Oral Interpretation of Literature.* See "Speech and Drama."

153, 154. *Readings in European Literature.* 6 s.h. Clubbe and Krueger

155. *Modern European Drama.* 3 s.h. Reardon

156. *Modern British Drama.* 3 s.h. Reardon

159. *Readings in Scandinavian Literature.* 3 s.h. Anderson

161. *Development of the English Language.* 3 s.h. Bowman

162. *Modern English Grammar.* 3 s.h. Butters

165, 166. *American Fiction.* 6 s.h. Anderson and Budd

167, 168. *The European Epic Tradition.* Prerequisite for 168: 167. 6 s.h. Knight

173. *American Literature from the Beginnings to 1800.* (To be offered in 1969-1970.)

174. *American Literature from 1800 to 1860.* (To be offered in 1969-1970.)

175. *American Literature from 1860 to 1915.* (To be offered in 1969-70.)

176. *American Literature from 1915 to the Present.* (To be offered in (1969-1970.)

179. *American Drama.* 3 s.h. Reardon

180. *Conference on Criticism.*

181. *Conference on Drama.* 3-6 s.h.

182. *Conference on Poetry.* 3-6 s.h.

183. *Conference on Fiction.* 3-6 s.h.

184. *Conference on Prose Non-Fiction or a Special Topic.* 3-6 s.h.

186. *The Industrial Spirit.* (Same as History 186.) 3 s.h. (Not offered in 1968-1969.)

191, 192. *Independent Study.* Open only to highly qualified students by permission of the Department. 6 s.h.

197-198. *Senior Seminar in English.* Admission by invitation of the Department. 6 s.h. Jones and Krueger

For Seniors and Graduates

203. *Chaucer. The Canterbury Tales.* 3 s.h. Nygard, Reiss, and van Kluyve

204. *Chaucer. Troilus and Criseyde and the Minor Poems.* 3 s.h. Nygard, Reiss, and van Kluyve

207, 208. *History of the English Language.* 6 s.h. Nygard, Reiss, and van Kluyve

209. *Present-Day English.* 3 s.h. Nygard and Reiss

210. *Old English Literary Tradition.* Prerequisite: English 207. 3 s.h. Nygard, Reiss, and van Kluyve

211. *Middle English Literary Tradition.* 3 s.h. Nygard, Reiss, and van Kluyve

213. *Introduction to Folklore.* 3 s.h. Nygard

215, 216. *Tudor and Stuart Drama, 1500-1642.* 6 s.h. Randall

217. *Milton.* 3 s.h. Lievsay
218. *Spenser.* 3 s.h. Lievsay
219, 220. *The Eighteenth Century.* 6 s.h. Boyce and Ferguson
221, 222. *English Literature of the Early Nineteenth Century.* 6 s.h. Patton, Sanders, and Stevenson
223, 224. *English Literature of the Later Nineteenth Century.* 6 s.h. Sanders and Stevenson
227. *Literary Criticism.* 3 s.h. Lievsay
229, 230. *American Literature, 1800-1865.* 6 s.h. Budd and Turner
233, 234. *American Literature, 1865-1920.* 6 s.h. Gohdes
235, 236. *American Literature Since 1920.* 6 s.h. Duffey
237. *English Drama, 1642-1800.* 3 s.h.
239. *Shakespeare.* 3 s.h. Williams
244. *Literary Biography.* 3 s.h. Sanders
251, 252. *English Literature in the Seventeenth Century.* 6 s.h. Jackson, Lievsay, and Randall
261, 262. *English Literature of the Twentieth Century.* 6 s.h. Smith
264. *Major Developments in Contemporary American Poetry.* 3 s.h.
266. *Recent Critical Thought.* 3 s.h. Duffey
269, 270. *Southern Literature.* 6 s.h. Turner
277. *English Prose of the Sixteenth Century.* 3 s.h. Lievsay
278. *English Non-Dramatic Poetry of the Sixteenth Century.* 3 s.h. Lievsay

Departmental Major

Prerequisite. English 55-56.

Major Requirements. Twenty-four semester hours above the sophomore level in writing, speech, drama, literature, and language; at least eighteen hours must be in English and American literature meeting the following requirements of distribution:

1. Six hours at the junior-senior level (generally to be taken in the junior year) in one of five designated period courses (143-144, 111-112, 125-126, 131-132, 137-138).
2. Three hours in one of the major authors: Chaucer, Shakespeare, or Milton (141, 203, 123, 124, 239, 117, 217).
3. The remaining hours must meet the following distribution requirements:
   (a) Three hours of English literature before 1800 (excluding major authors), unless the requirement is met in (1) above.
   (b) Three hours of English literature after 1800, unless the requirement is met in (1) above.
   (c) Three hours of American literature, unless the requirement is met in (1) above.

Related Work. Eighteen semester hours, which may include appropriate courses in history, aesthetics, art, music, foreign languages and literature, literature in translation, philosophy, religion, linguistics, and the teaching of English. Related work must be taken in at least two departments.

The Department offers work leading to graduation with distinction. See the section on Honors in this *Bulletin.*

Forestry

Students without a Bachelor's degree who are preparing for work in forestry as a profession should take the courses outlined under the Academic-Forestry Combination outlined in the section on Requirements for Degrees. However, with the consent of the instructor in charge, certain forestry courses may be elected by students in other curricula provided they have had adequate preparation (see *Bulletin of the School of Forestry*).

Members of the sophomore, junior, and senior classes, whether or not registered in the Forestry Combination Program, may elect the following course:

152. *Conserving Natural Resources.* 3 s.h. Staff

French

For courses offered in French, see *Romance Languages.*

Geology

Associate Professor Heron, *Acting Chairman*; Associate Professor Furbish, *Director of Undergraduate Studies*; Associate Professor Pilkey; Assistant Professor Lynts

1. *Physical Geology.* 4 s.h. Heron and Staff

2. *Historical Geology.* Prerequisite: Geology 1. 4 s.h. Heron and Staff

53. *Introductory Oceanography.* (Also listed as Botany 53.) Prerequisite: one year laboratory science or concurrent enrollment in a laboratory science. 3 s.h. Pilkey and Searles

101. *Crystallographic Mineralogy.* 3 s.h. Furbish

102. *Fundamentals of Mineralogy.* Prerequisite: Chemistry 2 (may be taken concurrently) and Geology 101. 3 s.h. Furbish

106. *Igneous and Metamorphic Rocks.* Prerequisite: Geology 102. 3 s.h. Furbish

108. *Sedimentary Rocks.* Prerequisite: Geology 1. 2 s.h. Heron

143. *Principles of Stratigraphy.* Prerequisite: Geology 2. 3 s.h. Staff

151. *Economic Geology.* Prerequisite: Geology 102. 3 s.h. Furbish

164. *Introduction to Geologic Field Methods.* Prerequisites: Geology 1 and 2. 3 s.h. Furbish

166. *Structure.* Prerequisites: Geology 106, 143. 3 s.h. Furbish

175, 176. *Majors Seminar.* Required of all majors: 175 in the spring of the junior year, 176 in the spring of the senior year. 1 s.h. Staff

191, 192. *Independent Study.* Open only to highly qualified juniors and seniors, by permission of the Director of Undergraduate Studies. 6 s.h. Staff

For Seniors and Graduates

203. *Advanced Stratigraphy.* Prerequisites: Geology 143 or consent of instructor. 3 s.h. Staff

205. *Geological Oceanography.* Not open to students who have completed Geology 206. 6 s.h. Pilkey (Given at Beaufort only.)

206. *Principles of Geological Oceanography.* Prerequisite: Geology 207 or consent of instructor. 3 s.h. Pilkey

207. *Sedimentary Petrography.* Prerequisites: Geology 108 or consent of instructor. 3 s.h. Heron

222. *Sedimentary Minerals.* Prerequisites: Geology 102 or consent of instructor. 3 s.h. Heron

235. *Sedimentary Geochemistry.* Prerequisites: Geology 102 or consent of instructor. 3 s.h. Pilkey

241-242. *Invertebrate Paleontology.* Prerequisites: Geology 1, 2, or consent of instructor. 6 s.h. Lynts

243-244. *Micropaleontology.* Prerequisites: Geology 241-242, or consent of instructor. 6 s.h. Lynts

247. *Paleoecology.* Prerequisites: Geology 207, 242, or consent of instructor. 3 s.h. Lynts

251. *Geomathematics.* Prerequisites: Geology 1 and 2 and Mathematics 22, or consent of instructor. 3 s.h. Lynts

Departmental Major

Prerequisites. Chemistry 1, 2, Geology 1 and 2.

Major Requirements. A.B. degree, a minimum of 24 hours of geology above the elementary courses (1, 2, and 53). B.S. degree, a minimum of 24 hours of geology above the elementary courses (1, 2, and 53) plus an approved summer field course normally taken during the summer of the junior year.

Related Work. Number of hours needed for A.B., 12 s.h.; for B.S., 18 s.h. Required courses, Mathematics 21, 22. Departments in which related work is usually taken: Chemistry, Mathematics, Physics, Zoology, and Engineering.

Germanic Languages and Literature

Professor Salinger, *Chairman*; Assistant Professor Alt, *Director of Undergraduate Studies*; Lecturer Bessent, *Supervisor of Freshman Instruction*; Professor Phelps; Visiting Professor Friederich; Associate Professor Maxwell; Assistant Professors Boletta and Romero; Visiting Lecturer Arnoldner; Instructors Arndt, Dent, Estes, Klabes, Krebs and McClung

1-2. *Elementary German.* 8 s.h. Bessent and Staff

63-64. *Intermediate German.* Prerequisite: German 1-2 or equivalent. 6 s.h. Bessent and Staff

German 63-64 is prerequisite for 91, 92, and all 100 group courses.

91, 92. *Introduction to German Literature.* 4 s.h. Arndt, Arnoldner, and Dent

107, 108. *Scientific German.* 4 s.h.

109, 110. *German Prose Fiction.* 4 s.h. Alt

115, 116. *German Drama of the Nineteenth Century.* 4 s.h. Arnoldner

117, 118. *German Conversation.* Restricted to German majors and other students by permission of the Department. 6 s.h. Bessent

119, 120. *Survey of German Literature.* 6 s.h. Romero

125, 126. *Contemporary German Literature.* 4 s.h. Arnoldner

131, 132. *Introduction to Goethe.* 4 s.h. Salinger

133, 134. *The German Lyric.* 6 s.h. Salinger

171, 172. *German Literature in English Translation.* 6 s.h.

191, 192. *Independent Study.* Open only to qualified juniors, by permission of the Department. 6 s.h. Alt, Boletta, Phelps, and Salinger

193, 194. *Independent Study.* Open only to qualified seniors, by permission of the Department. 6 s.h. Alt, Boletta, Phelps, and Salinger

201, 202. *Goethe.* 6 s.h. Phelps and Salinger

203, 204. *Eighteenth Century.* 6 s.h. Phelps

205, 206. *Middle High German.* 6 s.h. Boletta

207, 208. *German Romanticism.* 6 s.h.

209, 210. *Kleist, Grillparzer, and Hebbel.* 6 s.h. Alt and Salinger

211, 212. *Heinrich Heine and His Time.* 6 s.h. Salinger

213. *Nineteenth-Century Literature.* 3 s.h. Alt

214. *The Twentieth Century.* 3 s.h.

215. *Seventeenth-Century Literature.* 3 s.h. Friederich

216. *History of the German Language.* 3 s.h. Boletta

217. *Renaissance and Reformation Literature.* 3 s.h.

218. *The Teaching of German.* 3 s.h. Phelps

230. *German Cultural History.* 3 s.h.

Departmental Major

Prerequisites. German 1-2 and 63-64, or equivalent.

Major Requirements. Twenty-four semester hours in the German Department. Nine of these must be selected from the 200 courses. The remaining fifteen may be selected from any courses in the 100 or 200 groups. German 107, 108 does not count toward the major. German 117, 118, and 119, 120 (as well as Linguistics 101) are highly recommended to any student majoring in the Department.

Related Work. Eighteen semester hours, chosen from the Humanities with the approval of the Germanic Languages Department.

Greek

For courses in Greek, see *Classical Studies.*

Health and Physical Education

Trinity College and the School of Engineering

Mr. Cameron, *Director of Physical Education and Athletics*; Professor Friedrich, *Chairman of Physical Education and Assistant Director of Physical Education*; Assistant Professor Skinner, *Supervisor of Freshman Instruction*; Professor Falcone; Associate Professors Buehler, Cox, and Persons; Assistant Professors Corrie, Davis, Hall, Harvey, LeBar, Reibel; Instructors Butters, Coble, Hagler, and Daly

Required Physical Education for Men

A student must complete four semesters of physical education to fulfill graduation requirements. For each semester of undergraduate enrollment, the student is issued a uniform appropriate for the season and the activity in which he is engaging. The uniform is issued, exchanged, laundered, and maintained at no additional expense to the student. Equipment for courses is also furnished. Students who cannot swim are required to learn to swim during the Freshman year.

All students are given a medical and physical examination before registration. Freshmen who have physical handicaps must register in Adapted Physical Education—P.E. 11 and P.E. 12. Sophomores in P.E. 61 and 62. Students assigned to these classes will take work adapted to their particular needs and capacities. Freshman students lacking in basic fitness and proficiency are given special attention in a Fundamental Activities class.

Physical Education 1. Students not assigned to adapted physical education will register in P.E. 1—Foundations of Physical Education. The fall

program for freshmen has been specifically designed to provide the student with a broader concept of the "how" and "why" of physical activity. It includes an extensive battery of tests and involves information and activities related to interpretations of health and fitness, training techniques, relaxation techniques, weight control, body mechanics and posture control. Students are given an opportunity to improve their level of fitness and become acquainted with various sports activities, through a special orientation program.

On the basis of the test results and other factors such as body type, students are guided into those areas which can best help them develop their physical potential and provide for their present and future needs.

During the second semester students are enrolled in those activities best suited for them. Activities are selected from the various course offerings.

After a student completes freshman Physical Education (P.E. 1), he may fulfill his physical education requirement by electing and satisfactorily completing three courses from the following individual, dual, and team sports: P.E. 36—Beginning and Intermediate Swimming; P.E. 46—Swimming and Life Saving; P.E. 51—Tumbling, Rebound Tumbling and Apparatus; P.E. 52—Badminton-Handball; P.E. 53—Basketball-Speedball; P.E. 54—Combatives; P.E. 55—Soccer-Lacrosse; P.E. 56—Advanced Swimming and Water Safety; P.E. 57—Tennis-Volleyball; P.E. 58—Golf (fee of $10.00 for the semester charged for this course); P.E. 59—Track and Field Activities; P.E. 61 and 62—Sophomore adapted P.E. is offered for those students who are assigned to this course by the health center; P.E. 63—Individual Development (open to all students; includes conditioning, posture, weight control, fundamental movements, and weight training); P.E. 64—Fencing; P.E. 70—Bowling and Square Dancing ($10.00 fee required).

Elective Professional Physical Education Courses (Men)

The courses listed below are arranged to meet the increasing demand for teachers who are qualified to coach and teach Physical Education as well as for those who may have leadership responsibilities in the area of recreation. These courses are open as electives for students in High School Teaching Programs and others for whom such courses may be appropriate. Teaching majors may elect 18 semester hours from courses in this group. Six semester hours may be elected from the courses listed under Special Methods in Physical Education, 9 semester hours from the courses listed under Theory and Practice in Physical Education, and 3 semester hours from Health Education. The courses must be selected with the prior approval of the Director of Undergraduate Studies from the student's major department, in order to meet the needs of the individual.

Special Methods in Physical Education

163. *Athletic Coaching in Secondary Schools.* Prerequisites: courses 1 and 2. Open to juniors and seniors. 3 s.h. Buehler and Parker

164. *Athletic Coaching in Secondary Schools.* Prerequisites: courses 1 and 2. Open to juniors and seniors. 3 s.h. Falcone and Daly

Theory and Practice in Physical Education

65. *History and Principles of Physical Education.* 3 s.h. Friedrich

66. *Recreational Leadership.* 3 s.h. Friedrich

182. *The Administration of Physical Education and Athletics in Secondary Schools.* Open to juniors and seniors. 3 s.h. Corrie

190. *Protective Practices in Physical Education.* Open to juniors and seniors. 3 s.h. Davis

Health Education

132. *School Health Problems.* 3 s.h. Friedrich

The Woman's College

Professor McCue, *Chairman*; Professor Lewis, *Director of Undergraduate Studies*; Associate Professor Eddy, *Supervisor of Freshman Instruction*; Professor Bookhout; Associate Professors Holton and Uhrhane; Assistant Professors Lloyd, Spangler, Woodyard, and Wray; Instructor Raynor

Required Physical Education for Women

A student must complete four semester hours of physical education in order to fulfill graduation requirements. Ordinarily work must be completed by the end of the sophomore year. Classes meet three times a week or the equivalent thereof. Gym suit, dance leotard, bathing suit, warm-up suit, and towel are provided and laundered as needed.

Each semester is divided into halves. In general, indoor activities are taught during the two winter half-semesters and outdoor activities in the fall and spring.

Every student must take one course (half semester) in dance, and one in swimming if she is unable to pass the swimming test. The remaining work necessary to complete the requirement may be elected from the activities listed in this section.

All students are given a physical examination upon entering and at any other time when deemed necessary. Classes in adapted physical

education and recreational sports are arranged for those who should not take the more active work.

Special Freshman Physical Education

At the beginning of the year a series of tests is given to all freshman women. The test results are used to advise each student in registering for the course most beneficial for her. Courses in sports fundamentals, beginning swimming, and posture and movement are offered for those who need to improve their skills in these areas. Students whose test scores are satisfactory may enroll in activity classes with the sophomores. Special X sections are available for those students who score in the top ten per cent on motor ability.

Physical Education Activities

Individual and dual sports: archery, badminton, bowling, diving, fencing, first aid, golf, gymnastics, life saving, recreational sports, riding, swimming, tennis, track and field, and water safety.

Team sports: basketball, hockey, "rec" ball, softball, speedball, and volleyball.

Dance: folk dance, modern dance, square dance, and tap dance.

Developmental Activities: conditioning exercises, posture, posture and movement, and sports fundamentals.

1-2. *Freshman Activity.* 2 s.h. Staff

51-52. *Sophomore Activity.* 2 s.h. Staff

Theory in Physical Education

The courses listed in this section are open for credit as follows: P.E. 91, 101, 117, 119, 120, 181-182, and 185, Health Education 101-102 are open to students majoring in physical education and health; P.E. 91 is also open to students in the Elementary Teaching Program. Physical Education 105, 106, 113, 114, and 130 and Health Education 134, 137, 138, and 140 are open to all undergraduates, both men and women.

91. *First Aid and Safety in Physical Education.* 1 s.h. Lloyd

101. *History and Principles of Physical Education.* 3 s.h. McCue

102. *The Teaching of Physical Education in Elementary Schools.* Required of students in the elementary school teaching program. 2 s.h. Lewis

105, 106. *Methods and Materials in Recreation.* Open to sophomores, juniors, and seniors. 3 s.h. each. Holton

113. *Mammalian Anatomy.* Not open to students who have had Zoology 53. Prerequisite: Biology 1 and 2. 4 s.h. Bookhout

114. *Kinesiology.* Required of students majoring in physical education.

Prerequisites: Biology 1 and 2, and P.E. 113 or Zoology 53. 3 s.h. Bookhout

117. *Individual Physical Education.* 2 s.h. Bookhout

119. *Organization and Administration of Physical Education.* 2 s.h. McCue

120. *Measurement and Evaluation in Physical Education.* 2 s.h. Bookhout

130. *History of the Dance.* 3 s.h. Wray

181-182. *Methods and Materials in Physical Education.* 6 s.h. Lewis and Staff

185. *Advanced Methods and Materials in Physical Education.* Required of senior majors in physical education. 3 s.h. Lewis and Staff

Health Education

101-102. *Health Education Fundamentals, Methods, and Materials.* Open only to physical education majors. 6 s.h. Uhrhane

134. *School Health.* Open to men and women; juniors and seniors only. 2 s.h. Uhrhane

137. *Health Problems of Developing Countries.* Open to men and women. 3 s.h. Uhrhane

138. *Health Problems of Metropolitan Areas.* Open to men and women. 3 s.h. Uhrhane

140. *Gereology and Health.* Open to men and women. 3 s.h. Uhrhane

Major in Physical Education and Health

A major in physical education and health is offered for students who wish to teach physical education at the secondary level. The requirements meet the standards of the North Carolina Department of Public Instruction and of many other states.

Prerequisites. Biology 1-2, Psych. 91, (These courses also count as part of the uniform course requirements.) and P.E. 101.

Major Requirements. P.E. 91, 113, 114, 117, 119, 120, 181-182, 185.

Related Work. Zoology 151, H.E. 101-102. For certification in secondary teaching the related work includes: Education 100 or 113, 118, 215 and 216.

History

Professor Colton, *Chairman*; Associate Professor Young, *Director of Undergraduate Studies*; Associate Professor W. Scott, *Supervisor of Freshman Instruction*; Professors Alden, Crane, Curtiss, Durden, Fergu-

son, Hamilton, Hillerbrand, Holley, Lanning, Parker, Preston, Ropp, Watson, and Woody; Visiting Professor Wilkinson; Associate Professors Acomb, Davis, Gillin, Hollyday, Lerner, A. Scott, Silberman, and TePaske; Assistant Professors Cell, Ginter, Mauskopf, and Rainey; Instructors Cahow, Graham, R. Jones, Krantz, and Nathans

The undergraduate courses in history are designed to afford (1) an introduction to the study of history by a consideration of the history of the modern world; (2) a more intensive study of general American history; (3) opportunities for more advanced study of phases of American, English, European, Hispanic-American, Russian, and Asian history.

Course 1-2 or 51-52 or the equivalent is a prerequisite for all other courses; courses 91 and 92 are prerequisite for all 100 and 200 courses in United States history. However, seniors with written permission from the instructor may take advanced American history courses without having had 91 and 92. Sophomores who took only one semester of course 1-2 in the freshman year may take courses 91, 92, 95, 96 or 99 concurrently with the second semester, provided they made a grade of B or above on the semester taken. Sophomores must obtain permission of the instructor in order to be admitted to courses numbered above 100; students who are not fully qualified sophomores will not be admitted to these courses. Courses for seniors and graduates are limited to twenty-five students; juniors may not elect them without special permission from the Department and the Executive Committee of the Graduate Faculty.

1, 2. *A History of European Civilization.* 6 s.h. Open only to freshmen. Acomb, Cell, Ferguson, Gillin, Ginter, Graham, Hollyday, R. Jones, Krantz, Lerner, Mauskopf, Parker, Rainey, Ropp, W. Scott, Silberman, TePaske, and Young

43, 44. *Freshman Tutorial.* Offered as an elective to freshmen to supplement History 1, 2. 1 s.h. each semester. *Mauskopf*

51,52. *A History of European Civilization.* For sophomores, juniors, and seniors. 6 s.h. Staff

61, 62. *Non-Western Civilizations.* 6 s.h. Gillin, Graham, Silberman, and TePaske

91. *The Development of American Democracy to 1865.* 3 s.h. Cahow, Davis, Durden, Holley, Nathans, and A. Scott

92. *The Development of American Democracy, 1865 to the Present.* 3 s.h. Cahow, Davis, Durden, Holley, Nathans, and A. Scott

Courses 91 and 92 are prerequisite for all 100 and 200 courses in United States history, but this prerequisite may be waived for seniors by written permission of the instructor.

91A, 92A. *Upper Class Tutorial.* Open to upperclassmen enrolled in History 91-92. 1 s.h. each semester. Staff

93. *Modern Technology.* 3 s.h. Ropp

95, 96. *Ancient and Medieval History.* 6 s.h. Young

99. *Naval History and Elementary Strategy.* Not open to students who have had N.S. 102. 3 s.h. Ropp

101, 102. *Introduction to the Civilizations of Southern Asia.* (See Interdisciplinary Course 101, 102.)

103, 104. *Renaissance and Reformation.* 6 s.h. Krantz

105, 106. *Political and Constitutional History of England.* 6 s.h. Hamilton and Wilkinson

107, 108. *Social and Cultural History of England.* Sophomores who made an average grade of B or above on course 1-2 may be admitted to this course. 6 s.h. Ferguson

110. *History of Rome.* (Listed also as Classical Studies 132.) 3 s.h. Oates

111, 112. *America in the Colonial and Early Modern Era.* 6 s.h. Alden

113, 114. *America in the Twentieth Century.* 6 s.h. Watson

115, 116. *History of Africa.* 6 s.h. Graham

117, 118. *European Imperialism and Colonialism.* 6 s.h. Cell

119, 120. *History of Socialism and Communism.* 6 s.h. Lerner

121, 122. *Diplomatic History of the United States.* 6 s.h. Davis

123, 124. *City and Frontier in American History.* 6 s.h. A. Scott

125. *Greek History.* (Listed also as Classical Studies 129.) 3 s.h. Oates

127. *History of Latin America Through the Formation of the National Governments.* 3 s.h. Lanning and TePaske

128. *Inter-American Affairs.* 3 s.h. Lanning

131, 132. *The Development of the Major South American Powers.* 6 s.h. TePaske

135, 136. *Europe in the Twentieth Century.* 6 s.h. Colton

137, 138. *Foreign Relations of the European Powers.* 6 s.h. W. Scott

139, 140. *Nineteenth-Century Europe.* 6 s.h. Hollyday

141, 142. *China in Modern Times.* 6 s.h. Gillin

143, 144. *History of Modern Japan.* 6 s.h. Silberman

147. *The History of India to 1757: A Survey.* 3 s.h. Crane

148. *The History of India, 1757 to the Present: A Survey.* 3 s.h. Crane

149. *Military History.* 3 s.h. Ropp

153, 154. *The History of the South.* 6 s.h. Woody

157, 158. *The Rise of Modern Science.* 6 s.h. Mauskopf

161, 162. *Russia From Ivan the Terrible to the Present.* 6 s.h. Curtiss and Rainey

163, 164. *Reform and Politics in Nineteenth-Century America.* 6 s.h. Durden

167, 168. *Modern European Intellectual and Cultural History.* 6 s.h. Parker

185. *The Agrarian Spirit.* 3 s.h. Budd and A. Scott (Not offered in 1968-1969.)

186. *The Industrial Spirit.* (Same as English 186.) 3 s.h. (Not offered in 1968-1969.)

199. *The Changing South.* (See Interdisciplinary Course 199.)

For Seniors and Graduates

Students may receive credit for either semester of a hyphenated course at the 200-level without taking the other semester if they obtain written permission from the instructor and either the Director of Undergraduate or the Director of Graduate Studies.

201-202. *The History of Russia, 1801-1917.* 6 s.h. Curtiss

203-204. *The United States, 1850-1900.* 6 s.h. Woody

212. *Recent Interpretations of United States History.* Open only to history graduate students and seniors doing practice teaching in one of their final two semesters. 3 s.h. Watson

213-214. *The Old South.* 6 s.h. Woody

223-224. *The Old Regime and the French Revolution, 1661-1815.* 6 s.h. Acomb

225. *The Reformation of the Sixteenth Century.* (Listed also as Religion 250.) 3 s.h. *Hillerbrand*

226. *The Age of Counter-Reformation.* (Listed also as Religion 251.) 3 s.h. Hillerbrand

229. *Recent Interpretations of Modern European History.* Open only to history graduate students and seniors doing practice teaching in one of their final two semesters. 3 s.h. Parker

231-232. *The Hispanic Colonies and Republics in America.* 6 s.h. Lanning

233-234. *The Institutional, Cultural, and Social History of Hispanic America.* 6 s.h. Lanning

247. *The History of Modern India, 1757-1857.* 3 s.h. Crane

248. *The History of Modern India and Pakistan, 1857-1947.* 3 s.h. Crane

249-250. *Social and Intellectual History of the United States.* 6 s.h. Holley

263-264. *American Colonial History and the Revolution, 1607-1789.* 6 s.h. Alden

265-266. *Modern South America.* 6 s.h. TePaske

269. *British History from 1714 to 1867.* 3 s.h. Hamilton

270. *British History from Mid-Nineteenth Century.* 3 s.h. Hamilton

273, 274. *Topics in the History of Science.* 6 s.h. Mauskopf

275-276. *Central Europe, 1849-1914.* Not open to students who have had History 140. 6 s.h. Hollyday

277-278. *Reform and Politics in Nineteenth-Century U.S.A.* 6 s.h. Durden

285. *Origins of Indian Civilization.* (Listed also as Religion 285.) 3 s.h. Sullivan

287-288. *History of Modern Japan.* 6 s.h. Silberman

297. *The British Empire in the Nineteenth Century. (From 1783).* 3 s.h. Preston

298. *The Commonwealth in the Twentieth Century.* 3 s.h. Preston

For courses in Ancient History which may be taken for credit in either History or Classical Studies, see Classical Studies 253–*Greece to the Orientalizing Period*; 254–*The Age of the Tyrants and the Persian Wars*; 255–*The Age of Pericles*; 256–*The Fourth Century through Alexander.*

Independent Study

191, 192. *Independent Study.* Open by permission of the individual instructor and the Department. 6 s.h. Staff

193, 194. *Independent Study.* Same as 191, 192, but for seniors. 6 or 12 s.h. Staff

Undergraduate Seminars

97-98. *Sophomore Seminar.* Open to sophomores on application to the Director of Undergraduate Studies and with permission of the instructor. 6 s.h.

The following seminars are designed to offer opportunities for reading and historical investigation in significant problems. Juniors as well as seniors may apply for admission to these courses, and are urged to do so if they expect to be candidates for graduation with distinction in History or if they expect to practice-teach in their senior year. All seminars are open to non-majors as well as to majors.

195A-196A. *Renaissance Intellectual History.* 6 s.h. Krantz

195B-196B. *Seminar in Twentieth-Century Europe.* 6 s.h. Colton

195C-196C. *Problems in American Intellectual History.* Students may not receive credit for this course and 249-250. 6 s.h. Holley

195D-196D. *The Progressive Era Through the New Deal.* 6 s.h. Watson

195E-196E. *Seminar in American History Before 1789.* 6 s.h. Alden

195F-196F. *Problems in Nineteenth-Century American Reform and Politics.* Students may not receive credit for this course and 163-164. 6 s.h. Durden

195G-196G. *Nationalism and Communism in the Far East.* 6 s.h. Gillin

195H-196H. *From Rural to Urban Society in the United States.* 6 s.h. A. Scott

195I-196I. *Nationalism and Freedom in Nineteenth-Century Europe.* 6 s.h. Hollyday

195J-196J. *Studies in the History of Socialism and Communism.* 6 s.h. Lerner

195K-196K. *European Expansion and Imperialism.* 6 s.h. Cell

195L-196L. *Europe in the Age of the Reformation, 1500-1650.* 6 s.h. Hillerbrand

195N-196N. *The English Renaissance.* 6 s.h. Ferguson

195Q-196Q. *Class and Social Mobility in English History.* 6 s.h. Ginter

195R-196R. *The Age of Newton.* 6 s.h. Mauskopf

196.99. *History Honors Pro-Seminar.* Required in the spring semester of juniors selected for the Senior Honors Seminar of the following year. 1 s.h. Holley and Parker

197-198. *Senior Honors Seminar.* Open only to seniors, but not restricted to candidates for degree with distinction. This course, when taken by a history major, would be in addition to the 6 semester hours required in 195-196 seminars or 200-level courses of the History Department. 6 s.h. Holley and Parker

Departmental Major

Prerequisite. The introductory course in History (1-2 or 51-52).

Major Requirements. Students desiring to take a major in history are required to elect, in addition to History 1-2 or 51-52, 24 semester hours in the Department, including six semester hours in either an undergraduate seminar (195-196) or any course in the 200 group. Students are urged to take History 91-92; in any case those wishing to take the more advanced courses in American history should elect History 91-92 in the sophomore or junior year.

Honors. Any student who is qualified (see the section on Honors in this *Bulletin* for general requirements) may undertake work leading to a degree with distinction in History by presenting himself to his History faculty advisor as a candidate. Normally, Honors work involves participation in one of the Undergraduate Seminars during the junior year and selection for the Senior Honors Seminar in the senior year. Further information is available at the History Department Office (236 Allen).

Courses Approved for Related Work in History

Anthropology.

Art. History of Art

Economics. But not the courses listed under business administration and accounting except those in economic geography

Education. 113, 114, 225

English and American Literature.

German, Greek, Latin, Russian, and the Romance Languages. The literature courses that are not primarily conversation or composition

Greek, Latin. Except those courses that are primarily grammar or composition

Interdisciplinary. 101, 102, 199
Linguistics. 101
Music. History of Music
Philosophy. Except 48
Political Science.
Psychology. 91, 100, 101. And other courses if specifically approved
Religion. Especially those numbered above 100
Sociology

Interdisciplinary Courses

The following are cooperative courses offered by the departments concerned. Where a department accepts the course for the major, the same number is used as a departmental offering. Certain other departments accept these courses as related work.

101, 102. *Introduction to the Civilizations of Southern Asia.* 6 s.h. Apte, Braibanti, Crane, McCormack, Reed, Rowe, Spengler, Sullivan
103. *Introductory Journalism.* 1 s.h. Spearman
105. *Mass Media in Contemporary Society.* 3 s.h. Clark
199. *The Changing South.* 3 s.h.

Italian

For courses offered in Italian, see *Romance Languages.*

Latin

For courses offered in Latin, see *Classical Studies.*

Linguistics

The courses in Linguistics may be taken as electives by advanced students; certain courses serve as related work in several departments (see the entries for related work under the separate departments).

No major is offered in Linguistics. Students interested in the study of

language as a part of their undergraduate program or as a preparation for graduate work in linguistics should consult the instructors of the courses listed below.

101. *Introduction to Linguistics.* No specific prerequisite except sophomore standing. 3 s.h. Estes

For a description of the following courses consult the listings under the specified department.

Language and Society (Anthropology 238) Apte and McCormack
Linguistic Anthropology (Anthropology 260, 261) Apte
Development of the English Language (English 161)
Modern English Grammar (English 162)
Old English Grammar and Readings (English 207) Nygard
History of the English Language (English 208) Nygard
Old French Literature (French 219) Vincent
Middle High German (German 205, 206) Boletta
History of the German Language (German 216) Boletta
Symbolic Logic (Philosophy 103) Clark and Wilson
Philosophy of Language (Philosophy 109) Welsh
General Semantics and Theory of Language (Philosophy 246) Wilson
Romance Linguistics (Romance Languages 224) Hull
Old Spanish Language (Spanish 275) Davis

Mathematics

Professor Roberts, *Acting Chairman*; Professor Dressel, *Director of Undergraduate Studies*; Associate Professor Reynolds, *Supervisor of Freshman Instruction*; Professors Carlitz, Gallie, Murray, Shoenfield, Warner, and Woodbury; Adjunct Professor Sewell; Associate Professors Bryson, Burlak, Weisfeld, and Williams; Assistant Professors Baxley, Burdick, Caviness, Henson, Herr, Hodel, Kitchen, Moore, O'Fallon, Patrick, Scoville, Smith, Stackelberg, and Wilkinson; Instructors Mrs. Caviness, Entwhistle, Hall, Katz, Schorr, and Smith; Visiting Instructors (part-time) Briggs, and Schroeder

The following program of courses in Mathematics is planned for 1968-69.

Fall. 17, 21, 22, 41, 51, 63, 83, 112, 113, 133, 135, 139, 181, 183, 217, 221, 235, 271, 283, 285, 287, 291.

Spring. 21, 22, 42, 51, 63, 68, 111, 114, 126, 131, 133, 136, 140, 171, 184, 204, 218, 222, 234, 236, 244, 262, 272, 284, 286, 288, 292.

17. *Introduction to Finite Mathematics.* Prerequisite: three units of college preparatory mathematics. 3 s.h. Staff

21, 22. *Introductory Calculus.* Prerequisite: three units of college preparatory mathematics. Mathematics 21 is prerequisite for Mathematics 22. 6 s.h. Staff

41, 42. *Introductory Calculus.* Credit for this course and Mathematics 21, 22 is not allowed. Prerequisite: four units of college preparatory mathematics. 6 s.h. Staff

51. *Introduction to Digital Computation.* Prerequisite: three units of college preparatory mathematics. 3 s.h. Gallie

63. *Intermediate Calculus.* Prerequisite: Mathematics 22. 3 s.h. Staff

68. *Introduction to Linear Algebra.* Prerequisite: Mathematics 17 or 21. 3 s.h. Staff

83. *Intermediate Calculus.* Credit for this course and Mathematics 63 is not allowed. Prerequisite: Mathematics 42; or permission of the Director of Undergraduate Studies in Mathematics. 3 s.h. Staff

111. *Applied Mathematical Analysis I.* Not open to students who have had Mathematics 131. Prerequisite: Mathematics 63. 3 s.h. Staff

112. *Applied Mathematical Analysis II.* Prerequisite: Mathematics 63. 3 s.h. Staff

113, 114. *Modern Algebra.* Prerequisite: Mathematics 68 for 113; and 113 for 114. 6 s.h. Staff

126. *Introduction to Linear Programming and Game Theory.* Prerequisites: Mathematics 22 and 68 or consent of the instructor. 3 s.h. Staff

128. *Number Theory.* Prerequisite: Mathematics 63. 3 s.h. Staff

131. *Elementary Differential Equations.* Not open to students who have had Mathematics 111. Prerequisite: Mathematics 63. 3 s.h. Staff

133. *Basic Statistics.* Not open to students who have had Economics 138 or Psychology 117. 3 s.h. Bryson

135, 136. *Probability and Statistics.* Prerequisite: Mathematics 63 for 135; 68 and 135 for 136. 6 s.h. Burdick

139, 140. *Advanced Calculus.* Prerequisite: Mathematics 63 for 139; and 139 for 140. 6 s.h. Staff

141, 142. *Junior Mathematics Seminar.* Prerequisite: Mathematics 68 and 83 for 141; and 141 for 142; or permission of Director of Undergraduate Studies. 6 s.h. Staff

171. *Elementary Topology.* Prerequisite: Mathematics 63. 3 s.h. Staff

181. *Complex Analysis.* Prerequisite: Mathematics 63. 3 s.h. Staff

191, 192. *Independent Study.* Open to highly qualified juniors and seniors. 6 s.h. Staff

For Seniors and Graduates

204. *Geometry for Teachers.* 3 s.h. Reynolds

217, 218. *Intermediate Analysis.* Prerequisite: Mathematics 63 for 217; and 217 for 218. 6 s.h. Moore

221, 222. *Numerical Analysis.* Prerequisite: Mathematics 63 for 221, and 221 for 222. 6 s.h. Patrick

227, 228. *Theory of Numbers.* Prerequisite: Mathematics 63 for 227; and 227 for 228. 6 s.h. Carlitz

229, 230. *Algebraic Numbers.* Prerequisite: Mathematics 113 for 229; and 229 for 230. 6 s.h. Carlitz

234. *Sample Designs.* Prerequisite: Mathematics 133. 3 s.h. Bryson

235, 236. *Abstract Algebra.* Prerequisite: Mathematics 114 for 235; and 235 for 236. 6 s.h. Weisfeld

244. *Design of Experiments.* Prerequisite: Mathematics 133. 3 s.h. Burdick

245, 246. *Combinatorial Analysis.* Prerequisite: Calculus. 6 s.h. Carlitz

247, 248. *Arithmetic of Polynomials.* Prerequisite: Mathematics 235 or consent of the instructor for 247; and 247 for 248. 6 s.h. Carlitz

262. *Non-Parametric Statistics.* Prerequisite: Mathematics 244, or consent of the instructor. 3 s.h. Bryson

271, 272. *Introductory Topology.* Prerequisite: Calculus. 6 s.h. Hodel

273, 274. *Algebraic Topology.* Prerequisite: Mathematics 272. 6 s.h. Staff

275, 276. *Probability.* Prerequisite: Mathematics 135; or calculus and consent of the instructor. 6 s.h. Stackelberg

283. *Applied Mathematical Statistics.* Prerequisite: Mathematics 63. 3 s.h. Burdick

284. *Least Squares Analysis of Linear Models.* Prerequisite: Mathematics 136 or 283. 3 s.h. Burdick

285. *Applied Mathematical Methods I.* Prerequisite: Mathematics 63. 3 s.h. Dressel

286. *Applied Mathematical Methods II.* Prerequisite: Mathematics 63. 3 s.h. Dressel

287, 288. *Foundations of Mathematics.* Prerequisite: Mathematics 114 or Philosophy 103, or consent of the instructor. 6 s.h. Shoenfield

289. *Applications of Stochastic Processes I.* Prerequisite: Mathematics 135 and 140, or consent of the instructor. 3 s.h. Williams

290. *Applications of Stochastic Processes II.* Prerequisite: Mathematics 289 or consent of th einstructor. 3 s.h. Williams

291, 292. *Analysis I, II.* Prerequisite: Mathematics 218 or 140, or consent of the instructor. 6 s.h. Burlak

293. *Multivariate Statistics.* Prerequisite: Mathematics 284, or consent of the instructor. 3 s.h. O'Fallon

Departmental Major

For the A.B. degree:

Prerequisite. Mathematics 21, 22.

Major and Related Work. 42 semester hours.

Major Requirements. Mathematics 63, 68, and 18 semester hours in courses in mathematics numbered above 100, exclusive of Mathematics 133.

Related Work. 18-24 semester hours of course work from the following departments: chemistry, economics and business administration, philosophy, physics. Two courses above the introductory level must be taken in at least one of these departments.

For the B.S. degree:

Prerequisite. Mathematics 21, 22.

Major and Related Work. 48 semester hours.

Major Requirements. Mathematics 63, 68, and 18 semester hours in courses in mathematics numbered above 100, exclusive of Mathematics 133.

Related Work. 14-24 semester hours of course work in the natural sciences. Two courses above the introductory level must be taken in at least one of these departments.

The Department offers work leading to graduation with distinction. See the section on Honors in this *Bulletin*.

Medical Science

This course in medical science has been approved by the Faculty Council as appropriate for the Bachelor's degree.

M151. *Anatomy of the Lower Extremities as it Relates to Locomotion.* 3 s.h. Bassett

Music

Professor J. Mueller, *Chairman*; Associate Professor E. Saville, *Director of Undergraduate Studies*; Professors Bone, Hamilton, and Hanks; Associate Professors Bryan, Earls, Kirkendale and Withers; Visiting Artist Ciompi; Assistant Professors Di Cecco, Friedberg, Hendrix and Henry; Instructors Fishbaugh and McCall; Staff Associates Bergstone, Hill, Phelps, and Redding

Courses in music are offered for the general student who wishes to acquire knowledge of music as literature and, on a more technical level, for those prepared to major in the field. The courses marked * are open to general students without prerequisite.

Theory and Composition

65, 66. *Music Theory I.* Harmony and Theory of Music. 8 s.h. Earls and Hill

67, 68. *Composition I.* Prerequisite: Music 66 or consent of the instructor. 4 s.h. Earls and Hamilton

115, 116. *Music Theory II. Advanced Harmony and Counterpoint.* Prerequisite: Music 65-66. 6 s.h. Earls and Hill

117, 118. *Music Theory III. Composition and Analysis.* Prerequisite: Music 115-116 or consent of the instructor. 4 s.h. Hamilton and Earls

122. *Orchestration.* Prerequisites: Music 65, 66, 115, 116, or consent of the instructor. 3 s.h. Bone

History and Literature

1-2. **Introduction to Music Literature.* Open only to freshmen; others, see Music 51-52 and 51X-52X. 6 s.h. Henry

51-52. **Introduction to Music Literature.* Open only to upperclassmen who have not completed Music 1-2. 6 s.h. Staff

51X-52X. *Introduction to Music Literature.* 6 s.h. Kirkendale

125. **Masterworks of Music Literature.* 3 s.h. Hamilton and Mueller

134. **Choral Literature.* 3 s.h. Saville

135. *Piano Literature.* Prerequisites: Music 47A, 48A, 97A, and 98A, or consent of the instructor. 3 s.h. Withers

136. *Solo Song Literature.* Open to voice students and others by consent of the instructor. 3 s.h. Hanks

139. *Twentieth-Century Music.* Prerequisite: a one-year course in Music Theory or Literature, or consent of the instructor. 3 s.h. Hamilton

149. *Organ Literature.* Open to organ students and others by consent of the instructor. 3 s.h. Hendrix

161-162. *History of Music.* Prerequisite: a one-year course in Music Theory or Literature (preferably Music 51X-52X), or consent of the instructor. 6 s.h. Saville

163. **Music in the Eighteenth Century.* 3 s.h. Bryan

164. **Music in the Nineteenth Century.* 3 s.h. Mueller

165. **Opera Literature.* 3 s.h. Saville

173. **World Music.* 3 s.h. Earls

Independent Study and Senior Seminar

Admission to these courses will be subject to approval of the Director of Undergraduate Studies of the Department of Music and the individual instructor. The instructor as well as the course content will be established in accordance with the individual student's interests and capacities.

The Department offers work leading to graduation with distinction. See the sections on academic honors and special curricular programs on pages 54 and 55.

191, 192. *Independent Study.* Open only to highly qualified students in the junior year, by permission of the department. 6 s.h. Staff

193, 194. *Independent Study.* Same as 191, 192 but for seniors. 6-12 s.h. Staff

195, 196. *Senior Seminar in Music.* Open only to seniors, but not restricted to candidates for degree with distinction. 6 s.h. Kirkendale

Music Education and Pedagogy

57-58. *Vocal Diction.* Required of all Applied Voice Majors. 2 s.h. Hanks

106. *Piano Methods and Materials.* Prerequisite: Music 47A, 48A, 97A, and 98A, or consent of the instructor. 3 s.h. Withers

121. *Conducting.* Prerequisites: Music 65-66, 115-116 or consent of the instructor. 3 s.h. Bone

145-146. *Techniques of Keyboard Ensemble and Accompanying.* Prerequisite: a working level of keyboard efficiency. 4 s.h. Friedberg

151. *Public School Music Education (Elementary).* 3 s.h. McCall

152. *Public School Music Literature (Elementary).* 3 s.h. McCall

153. *Vocal Music in the Public School (Secondary).* 3 s.h. Saville

154. *Instrumental Music in the Public School (Secondary).* 3 s.h. Bone

Applied Music

The study of Applied Music concerns the understanding of music literature through performance. Instruction is offered in the following media: A. Piano; B. Strings; C. Woodwinds; D. Brass; E. Voice; F. Ensemble—Instrumental, Piano, Vocal coaching and performance; participation through one of the Departmental Ensembles listed at close of the Music section; G. Organ. Instruction in media A through E may be private or in classes limited to a minimum of 4 and a maximum of 7 students. Class instruction is restricted to the first 4 grades of proficiency. Class instruction shall be designated by adding the letter X to the appropriate medium and year-in-school classification. (Example: junior year, Woodwinds, class instruction is recorded 147CX.)

Students must arrange an audition with the instructor *prior to registration in Applied Music courses.* The course numbers listed below refer to the student's class standing and not his musical proficiency.

Piano. 47A, 48A; 97A, 98A; 147A, 148A; 197A, 198A. For 1 or 2 s.h. Withers, Fishbaugh, and Phelps

Violin, Viola, 'Cello. 47B, 48B; 97B, 98B; 147B, 148B; 197B, 198B. 1 or 2 s.h. Ciompi, Di Cecco, and J. Mueller

Woodwinds. 47C, 48C; 97C, 98C; 147C, 148C; 197C, 198C. 1 or 2 s.h. Henry

Brass. 47D, 48D; 97D, 98D, 147D, 148D; 197D, 198D. 1 or 2 s.h. *Bergstone*

Voice. 47E, 48E; 97E, 98E; 147E, 148E; 197E, 198E. 1 or 2 s.h. Hanks and Redding

Ensemble. 47F, 48F; 97F, 98F; 147F, 148F; 197F, 198F. 1 s.h. Staff

Organ. 47G, 48G; 97G, 98G; 147G, 148G; 197G, 198G. 1 or 2 s.h. Hendrix

Credits. Credit for instruction in media A, B, C, D, E, and G is granted on the basis of 2 s.h. per semester for *one hour* of private instruction per week and a minimum of six hours practice weekly; or 1 s.h. per semester for *one-half hour* of private instruction, or one period of class study, and a minimum of six hours practice per week. An additional weekly class meeting for performance and criticism may be required by the instructor without additional credit.

Credit for instruction in medium F is granted on the basis of 1 s.h. per semester for one rehearsal period of instruction and a minimum of three hours practice per week.

Music Majors. Shall plan their Applied Music study so as to meet the following requirements of their chosen areas of concentration:

Majors in Music Theory or Music History and Literature should earn a minimum of 6 s.h. credit in Applied Music.

Majors in Applied Music must register for one hour of private instruction *per semester* and may earn a maximum of 18 s.h. credit in Applied Music.

Majors in Music Education who expect to teach music in the public schools should plan their Applied Music programs in consultation with the Director of Undergraduate Studies in Music. The credit hours in Applied Music required for certification in North Carolina may be earned through a program which includes the study of a major medium, a minor medium and participation in departmental organizations.

Nonmajors. Students other than music majors may receive not more than 8 s.h. credit for work in Applied Music. They may elect after consultation with the Department either 1 hour (2 s.h. credit) or ½ hour (1 s.h. credit) of private instruction per semester. *No credit in Applied Music* will be allowed unless the student satisfactorily completes at some time before graduation six semester hours in Music Theory, or Music History and Literature.

Fees. Upper class students who have been accepted as music majors at the time of registration for applied music courses are exempt from paying the applied music fees. Other students are charged for all applied music media except "F" (Ensemble).

Fees are payable to the Treasurer's office of Duke University upon notification from that office at the beginning of each semester as follows:

One ½ hour private lesson per week for one semester..... $45.00
Two ½ hour private lessons per week or one 1-hour private lesson per week for one semester..... 80.00
One 1-hour class lesson per week for one semester..... 20.00

All students registered for applied music instruction are charged for practice room facilities—students having practice facilities off campus *must* notify the departmental office of this fact by the end of the third week of *each* semester; otherwise they will be automatically billed as follows:

Medium A. Piano
Medium E. Voice
Medium G. Organ
} $15.00 per semester (room with piano or organ)

Medium B. Strings
Medium C. Woodwinds
Medium D. Brass
} $10.00 per semester (room without piano)

Medium F. Ensemble — No practice room fee is charged

Departmental Major

Prerequisites. Music 51-52 and 65-66.

Major Requirements. A minimum of 24 s.h. beyond the prerequisite courses including Music 115-116 and 147-148. Participation in one of the departmental Ensembles or Organizations during *each* semester of undergraduate study.

During Orientation Week all prospective entering Freshman Music Majors are required to take: A. Piano proficiency exam., B. Theory proficiency exam., C. Audition in their major performance medium.

Related Work. Eighteen semester hours, which may include courses above the freshman level in history, languages and literature, art, religion, or topics deemed pertinent to the student's program by the faculty advisor. Courses must be taken in at least two departments.

Areas of Upperclass Specialization

Concentration in one of four major areas in Music is possible in the junior and senior years. While the following outlines include more than the number of hours *required* for a major in music, they are strongly recommended by the Department as a basis for effective study.

Theory and Composition

Required: Music 117-118, 122; Applied Music: 6 s.h.

Additional Departmental Recommendations: Music Electives: 6 s.h.

History and Literature

Required: 2 Elective Courses in Music Literature; plus Music 197, 198; Applied Music: 2 s.h.

Additional Departmental Recommendations: Music Electives: 10 s.h., including a minimum of 4 s.h. in Applied Music.

Applied Music. A program of study designed for those students who intend to become performers and teachers of applied music.

Required: Applied Music: 12 s.h.

Additional Departmental Recommendations: Applied Music: 6 s.h.; Piano or Organ: Music 135 or 149; 106 (Piano Majors only); Voice: Music 136; 57-58; Other Media: Study sequence to be worked out in consultation with the Director of Undergraduate Studies.

Music Education. A program of study designed for prospective teachers of High School Instrumental or Vocal Music. Details of this program are shown on page 12 of this *Bulletin.*

Departmental Ensembles

Brass Ensemble
Chamber Orchestra
Madrigal Singers
Piano Ensemble (may be in combination with Instruments or Voice)
String Ensemble (Sonata, Trio or Quartet)
Vocal Ensemble (Opera Workshop)
Woodwind Quintet

Departmental Organizations

Duke University Concert Band
Duke University Symphony Orchestra

Naval Science

Professor Cocowitch, Captain, U.S. Navy, *Chairman*; Associate Professor Rumelhart, Lieutenant Commander, U.S. Navy, *Director of Undergraduate Studies*; Assistant Professors: Ram, Major, U.S. Marine Corps; Hobbs, Lieutenant, U.S. Navy; Renager, Lieutenant, U.S. Navy; Thach, Lieutenant, U.S. Navy

Standardized titles and numbers for courses are established by the Bureau of Naval Personnel for use at the 52 NROTC institutions. The first digit indicates the year of the course; the second digit (0) indicates that it is given on a semester basis; the third digit indicates the semester of the school year in which offered. Specialized courses for Marine Corps Officer candidates are indicated by the letter "M" after the number, and substitute for the basic course of the same number.

NS 101. *Naval Orientation.* 3 s.h. Thach

NS 102. *Naval History.* 3 s.h. Thach

91. *Introductory Psychology.* Required for all NROTC midshipmen. 3 s.h. Psychology Staff

NS 201. *Naval Weapons.* 3 s.h. Renager

NS 301. *Navigation.* 3 s.h. Hobbs

NS 302. *Naval Operations.* 3 s.h. Hobbs

NS 401. *Naval Engineering.* 3 s.h. Rumelhart

NS 402. *Principles and Problems of Leadership.* 3 s.h. Rumelhart

NS 301M. *Evolution of the Art of War.* For Marine Corps Candidates. 3 s.h. Ram

NS 302M. *Modern Basic Strategy and Tactics.* For Marine Corps Candidates. 3 s.h. Ram

Nursing

The nursing program is published separately in the *Bulletin of the School of Nursing.* Consult the Table of Contents of this General Catalogue and also the list of Annual Bulletins on the inside of the front cover.

Philosophy

Professor Baylis, *Chairman*; Professor Wilson, *Director of Undergraduate Studies*; Assistant Professor Mahoney, Supervisor of Freshman Instruction; Professors Clark, Negley, Peach, and Welsh; Assistant Professor Spector

The undergraduate program in the Department of philosophy is designed to acquaint students with the content and the structure of philosophical theory in various areas. Discussion is encouraged so that the student can engage actively in the philosophical examination of problems.

Course offerings fall into two general categories: the systematic and the historical. In a systematic treatment, the organization of a course is primarily in terms of the problems presented by the subject-matter of that course, as in logic, ethics, metaphysics, etc. In historical courses, attention is directed more to the order of development in the thought of a particular philosopher (Plato, Aristotle, Kant, etc.), or in a historical period. In all courses, reading of the works of philosophers will acquaint the students with the important and influential contributions to the definition and solution of philosophical issues.

The problems raised in philosophy in respect to the various fields of the arts and sciences involve questions which are not normally given attention

in those particular disciplines. In the consideration of such problems, therefore, it is expected that the student will acquire some understanding and perspective of the major areas of man's intellectual endeavor. In this sense, philosophical comprehension is an essential part of a student's learning and education.

41, 42. *Knowledge, Fact, and Value.* Philosophy 42 may be taken before, or with, Philosophy 41. Not open to juniors and seniors who have not already had one of the sequence. 6 s.h. Staff

43, 44. *Freshman Tutorials.* Open only to students concurrently enrolled in Philosophy 41 or 42. 1 s.h. Clark, Peach

48. *Logic.* 3 s.h. Clark, Spector, Welsh, and Wilson

93, 94. *History of Philosophy: Ancient and Modern.* Open to freshmen with a *B* average. 6 s.h. Mahoney, Spector, Peach, and Wilson

101. *Philosophy of Religion.* 3 s.h.

103. *Symbolic Logic.* Open to sophomores by permission of instructor. 3 s.h. Clark and Wilson

104. *Philosophy of Science.* 3 s.h. Spector

107. *Political and Social Philosophy.* 3 s.h. Negley

108. *Social Ideals and Utopias.* 3 s.h. Negley

109. *Philosophy of Language.* 3 s.h. Welsh

110. *Epistemology.* 3 s.h. Baylis

111. *Metaphysics.* 3 s.h. Baylis and Wilson

117. *Ancient and Modern Ethical Theories.* 3 s.h. Welsh

119. *Introduction to Medieval Philosophy.* 3 s.h. Mahoney

For Seniors and Graduates

202. *Aesthetics: The Philosophy of Criticism.* Open to juniors with the approval of the instructor. 3 s.h. Welsh

203. *Contemporary Ethical Theories.* 3 s.h. Baylis

205. *The Philosophy of History.* 3 s.h. Negley

208. *Political Values.* 3 s.h. Negley

211. *Plato.* 3 s.h. Mahoney

217. *Aristotle.* 3 s.h. Mahoney

218. *Medieval Philosophy.* 3 s.h. Mahoney

219. *Kant.* 3 s.h. Negley

225. *British Empiricism.* 3 s.h. Peach

227. *Continental Rationalism.* 3 s.h. Peach

228. *Recent and Contemporary Philosophy.* 3 s.h. Welsh

229. *American Pragmatism.* 3 s.h. Welsh

233. *Introduction to the Philosophy of Science.* 3 s.h. Spector

234. *Philosophy of Science.* Prerequisite: consent of the instructor. 3 s.h. Spector

235. *Philosophy and the Sciences.* 3 s.h. Spector

241. *Logic.* 3 s.h. Clark and Wilson

246. *General Semantics and Theory of Language.* Prerequisite: Philosophy 103 or the equivalent. 3 s.h. Wilson

247. *Philosophical Cosmology.* 3 s.h. Wilson

250. *Philosophical Analysis.* 3 s.h. Baylis, Clark, and Wilson

251. *Epistemology.* 3 s.h. Baylis

252. *Metaphysics.* 3 s.h. Baylis, Clark, and Wilson

253. *Philosophy of Mind.* 3 s.h. Clark

291, 292. *Critical Philosophy.* 3 s.h. each. Open only by permission of the department. 291 is ordinarily prerequisite for 292. The Graduate Staff

Departmental Major

Philosophy 48 (Logic) is recommended for all those intending to major in philosophy. Philosophy 41, 42 is ordinarily a prerequisite to major work.

Major requirements. 24 semester hours in philosophy of which at least eighteen must be in courses numbered above 48. The following must be included: Philosophy 93, and 94; Philosophy 117, or 203, or 208; and 6 semester hours in Philosophy senior-graduate courses.

Related Work. Six hours minimum in each of two departments approved by the philosophy adviser. Courses may not be those primarily open to freshmen. There is no restriction in principle as to departments in which related work may be taken, and the approval of the Philosophy adviser is required only to insure some coherence in the program of major and related work as a whole.

The Department offers work leading to graduation with distinction. See the section on Honors.

Physics

Professor Fairbank, *Chairman*; Professor Meyer, *Director of Undergraduate Studies*; Professor Carpenter, *Supervisor of Freshman Instruction*; Professors Biedenharn, Fowler, Gordy, Greuling, Lewis, and Newson; Associate Professors Bilpuch, Robinson, and Walter; Assistant Professors Beres, Carpenter, Cook, Evans, Fortney, Guyer, Han, Roberson, and Rose; Lecturers Deis, Hayne, Jarvis, Kyker, Lipshutz, and Pearson

1-2. *Introductory Physics.* Open to freshmen, sophomores, and juniors and meets the general science requirement. 8 s.h. Carpenter, Kyker, Pearson, and assistants

41-42. *Fundamentals of Physics.* For students interested in majoring in physics; usually taken in the freshman year. Prerequisites: approval of the Department; Mathematics 21-22 or equivalent (may be taken concurrently). 8 s.h. Rose

51-52. *General Physics.* Designed for students entering medicine, engineering, and the sciences. Not open for credit to students who have completed Physics 1-2 or 41-42. Students planning to major in physics should enroll in Physics 41-42 in their freshman year. Prerequisites: Mathematics 21, 22, or equivalent (may be taken concurrently). 8 s.h. Evans, Fairbank, Greuling, Hayne, Lewis, Walter, and assistants

161, 162. *Modern Physics.* Prerequisites: Physics 41-42, Mathematics 22. 161 is prerequisite for 162. 6 s.h. Roberson, Carpenter

171. *Electronics.* Prerequisite: Physics 41-42. 4 s.h. Jarvis

176. *Thermodynamics and Kinetic Theory.* Prerequisites: Physics 41-42, and differential and integral calculus. 3 s.h. Meyer

181-182. *Classical Mechanics.* 6 s.h. Beres

A course in general college physics, validated by examination, and a course in differential and integral calculus are prerequisites to all courses numbered 200 and above.

209. *Introduction to Solid State Physics.* 3 s.h. Deis

215. *Introduction to Quantum Mechanics.* Prerequisites: Physics 162, 182 or equivalents; Mathematics 285–286 should be taken concurrently. 3 s.h. Evans

217, 218. *Advanced Physics Laboratory.* 6 s.h. Meyer

220. *Advanced Electronics.* 4 s.h. Jarvis

221, 222. *Theoretical Physics.* Prerequisite: Mathematics 285-286 or equivalent to be taken at least concurrently. 6 s.h. Cook

223. *Electricity and Magnetism.* 3 s.h. Robinson

224. *Electricity and Magnetism.* Prerequisite: Physics 223. 3 s.h. Robinson

225, 226. *Elementary Investigations.* 3-6 s.h. Staff

Departmental Major

A student wishing to major in physics should arrange to complete the necessary mathematics as soon as possible. Special sections (denoted by "x" in the course schedule) have been arranged in Physics 161-162. These sections are primarily for physics majors, and it is recommended that persons planning to major in physics should attempt to fit them into their schedules. This recommendation is not a requirement however. Since Physics 1-2 is intended primarily for non-science majors, it is not recommended for physics majors.

For the A.B. degree:

Prerequisites. Physics 1-2 or 41-42 or 51-52 or equivalent, and Mathematics 21, 22.

Major Requirements. At least 18 semester hours in physics from Physics 161, 162, 171, 176, 217, 218, 181, 182, 223, 224, 215.

Related Work. Eighteen to 24 semester hours from the following courses: Mathematics 63, 64, 113, 139, 140, and Chemistry 1, 2 or 1 and 42.

For the B.S. degree:

Prerequisites. Physics 1-2 or 41-42 or 51-52 or equivalent, and Mathematics 21, 22 or equivalent.

Major Requirements. Physics 161, 162, 171, 176, 181, 182, 223, 224, 217, and 218.

Related Work. Fourteen to 24 semester hours from the following courses: Mathematics 63, 64, 113, 139, 140, and Chemistry 1, 2 or 1 and 42.

The Department offers to the student in his senior year the possibility of being associated with research conducted in this institution. Such work may lead to graduation with distinction. See the section on Honors.

Political Science

Professor Hallowell, *Chairman*; Associate Professor Cook, *Acting Director of Undergraduate Studies*; Professors Ball, Braibanti, Cole, Kulski, Proctor, Rankin, Simpson, and Wilson; Adjunct Professor Grzybowski; Visiting Professors Pollitt and Schweitzer; Associate Professors Hall and Kornberg; Assistant Professors Braithwaite, Hart and Strange; Instructors Baylis, Cooper, Paletz, Polhemus, Spragens, and Henry

The objective of the Department of Political Science is to acquaint students with the theory and practice of government and politics at the local, state, national and international levels. While primary attention is focused upon the American political and administrative system, emphasis is also placed upon a comparative study of the political institutions and movements of thought peculiar to the nations of Europe, Latin America, Africa and Southern Asia. The student's attention is also directed to the problems encountered in international organization, politics and law. The development of political philosophy from Plato to the present day is an essential part of the department's course offerings. Methods of study include the empirical, the historical, the legal, the comparative and the philosophical.

Directing its effort to an intelligent understanding of the contemporary world and of the responsibilities which are laid upon citizens of a democracy, the Department of Political Science shares the objectives of a liberal arts education. While the department does not aim at vocational education, the knowledge it seeks to impart should be useful to anyone contemplating a career in law, the government service, or politics.

Students intending to major in the department should take Political Science 11 or 61. Ordinarily one of them must be taken before proceeding to more advanced work in the department. This rule may be waived with the consent of the Director of Undergraduate Studies.

The advanced courses are divided into four major groups. Majors are required to take at least three semester hours in three of these groups.

Political Science 197 and 198 are designed to provide an opportunity for majors in the department to qualify for graduation with distinction.

Introductory Courses

11. *The American Political System.* Freshmen only. 3 s.h. Braithwaite, Cooper, Henry, Paletz, and Spragens

61. *The American Political System.* (Not open to freshmen.) 3 s.h. Baylis, Cook, Kornberg, Paletz, Polhemus, and Simpson

Political Theory and Methodology

123. *Introduction to Political Philosophy.* 3 s.h. Hallowell and Spragens

126. *Democratic Theory and Political Reality.* 3 s.h. Strange

127. *Introduction to Law.* 3 s.h. Open only to juniors and seniors. Grzybowski

131. *Introduction to American Political Thought.* 3 s.h. Leach and Cook

132. *Contemporary Political Ideologies.* 3 s.h. Cook

197. *Principles and Methods of Political Inquiry.* Open only to juniors and seniors. Required of all political science majors who are candidates for the degree with distinction. Prerequisites: nine semester hours in political science and consent of the instructor. 3 s.h. Braithwaite

222. *Empirical Theory and Methodology.* 3 s.h. Kornberg

223. *Political Philosophy from Plato to Machiavelli.* 3 s.h. Hallowell

224. *Modern Political Theory.* 3 s.h. Hallowell

229. *Recent and Contemporary Political Theory.* 3 s.h. Hallowell

231. *American Political Theory.* 3 s.h. Cook

249. *Comparative Political Analysis and Political Development.* 3 s.h. Braibanti

Comparative Government and Politics

136. *Comparative Government and Politics: Europe.* 3 s.h. Baylis

151. *Comparative Government and Politics: Latin America.* 3 s.h. Ball

155. *Problems of Political Development in the New States.* 3 s.h. Baylis

165. *The Government and Politics of the U.S.S.R.* 3 s.h. Kulski

166. *Soviet Foreign Relations.* 3 s.h. Kulski

180. *Comparative Government and Politics: Southern Asia I.* 3 s.h. Braibanti

181. *Comparative Government and Politics: Southern Asia II.* 3 s.h. Braibanti

214. *Comparative Administrative Law.* 3 s.h. Gryzbowski

225. *Comparative Government and Politics: Western Europe.* 3 s.h. Cole and Schweitzer

235. *The British Commonwealth.* 3 s.h. Cole

250. *Comparative Government and Politics: Southern Asia I.* 3 s.h. Braibanti

251. *Comparative Government and Politics: Southern Asia II.* 3 s.h. Braibanti

280. *Comparative Government and Politics: Sub-Saharan Africa.* 3 s.h. Proctor

American Government and Public Administration

109. *State and Local Government Today.* 3 s.h. Leach

125. *American Political Parties and Practical Politics.* 3 s.h. Simpson

128. *The Judicial Process.* 3 s.h. Open only to juniors and seniors.

129.*Groups in American Politics.* 3 s.h. Strange and Paletz

130. *Politics and the Media of Mass Communication.* 3 s.h. Paletz

137. *Political Behavior in Elections.* 3 s.h.

138. *Political Behavior in Policy Making.* 3 s.h. Braithwaite

139. *Science and Government.* 3 s.h. Braithwaite

141. *Public Administration.* 3 s.h. Hall

142. *Administrative Responsibility.* 3 s.h. Hall

146. *Legislation.* 3 s.h. Simpson

161. *Government and Planning.* 3 s.h. Leach

164. *Government Regulatory Policy and Administration.* 3 s.h. Hall

174. *Political Implications of Economic Legislation.* 3 s.h. Simpson

199. *The Changing South.* (See Interdisciplinary Course 199.)

207. *American Constitutional Law and Theory.* 3 s.h. Rankin and Pollitt

208. *American Constitutional Law and Current National Problems.* 3 s.h. Rankin

209. *Problems in State and Local Government in the United States.* 3 s.h. Rankin and Leach

230. *American Political Institutions.* 3 s.h. Rankin

234. *Civil-Military Relationships in American Government.* 3 s.h.

241. *Public Administrative Organization and Management.* 3 s.h. Hall

242. *National Administration.* 3 s.h. Hall

244. *Administrative Law and Process.* 3 s.h. Hall

246. *Government Administration and Public Policy.* 3 s.h. Hall

275. *The National Party System.* 3 s.h. Kornberg

276. *Comparative State Parties and Politics.* 3 s.h.

285. *The Judicial Process.* Prerequisites: Political Science 127, 207, or their equivalents. Not open to students who have completed Political Science 128. 3 s.h.

291. *Problems of Urban Government.* 3 s.h. Leach
292. *Urban Administration.* 3 s.h. Leach

International Law and Relations

121. *Elements of International Relations.* 3 s.h. Proctor and Hart
122. *Modern International Politics.* 3 s.h. Proctor and Hart
124. *The New States of Africa in World Affairs.* 3 s.h. Proctor
157. *U. S. Foreign Policy.* 3 s.h. Hart
158. *Control of American Foreign Policy.* 3 s.h. Ball
220. *Problems in International Politics.* 3 s.h. Kulski
221. *International Public Organization.* 3 s.h. Wilson and Ball
227-228. *International Law.* 6 s.h. Wilson

Independent Reading and Undergraduate Seminars

191, 192. *Independent Study.* Open only to qualified juniors by permission of the Director of Undergraduate Studies and of the individual instructor. 3-6 s.h. Staff

193, 194. *Independent Study.* Open only to qualified seniors by permission of the Director of Undergraduate Studies and of the individual instructor. 3-6 s.h. Staff

195, 196. *Junior Seminar in Political Science.* Prerequisites: Political Science 11 or 61 and the consent of the instructor. Open to non-majors as well as to majors. Staff

198. *Senior Honors Seminar.* Open only to senior political science majors who are candidates for the degree with distinction. Prerequisite: Political Science 197 and consent of the instructor. 3 s.h. Staff

Departmental Major

Prerequisite. Political Science 11 or 61.

Major Requirements. Twenty-one semester hours of work in the Department above courses 11 or 61, including at least six semester hours of 200 courses. Majors must take at least three semester hours in each of three fields.

Related Work. Eighteen hours in departments approved by the Political Science adviser, of which at least six hours must be taken in *each* of two departments and no more than six hours may be in courses primarily open to freshmen. Related work is usually taken in economics, history, philosophy, psychology and sociology and in Interdisciplinary Course 101, 102.

The Department offers work leading to graduation with distinction. See the section on Honors.

Portuguese

For courses in Portuguese, see *Romance Languages.*

Psychology

Professor Alexander, *Chairman*; Associate Professor Wing, *Director of Undergraduate Studies*; Professors Adams, Brehm, Dai, Diamond, Guttman, Jones, Kimble, Wallach; Associate Professors Altrocchi, Borstelmann, Carson, R. Erickson, Lakin, McHugh, Schiffman; Research Associate Professor Gaffron; Assistant Professors C. Erickson, Kremen, Linder, Lockhead, Staddon, Wortman; Lecturers Botwinick, Clifford, E. Crovitz, H. Crovitz, Eisdorfer, Feather, I. Gehman, Huse, Kinsbourne, Krugman, Murphy, Obrist, Peele, Shmavonian, Somjen, Stedman, Thompson

Psychology 91 or its equivalent is a prerequisite for all other courses in psychology. Six semester hours in psychology (including Psychology 91) or special permission of the course instructor or the Director of Undergraduate Studies are required for admission to all psychology courses over 140.

91. *Introductory Psychology.* 3 s.h. Staff

100. *Personality.* Not open to students who have had Psychology 116. 3 s.h. Alexander and Kremen

101. *Introductory Social Psychology.* 3 s.h. Jones and Linder

104. *Comparative Psychology.* 3 s.h. Staff

110. *Applied Psychology.* 3 s.h. McHugh

111. *Advanced General Psychology.* 3 s.h. Staff

116. *Psychology of Personality.* Not open to students who have had Education 68 or Psychology 100. Open normally to nursing students and to others by permission of the instructor. 3 s.h. E. Crovitz

117. *Statistical Methods in Psychology.* 3 s.h. Staff

118. *Experimental Methods in Psychology.* 3 s.h. Staff

121. *Child Psychology.* 3 s.h. Borstelmann and McHugh

122. *Adjustment of the Pre-School Child.* Prerequisite: Psychology 121. 3 s.h. Staff

126. *Adolescent Psychology.* Prerequisite: Psychology 121 or Education 118, or permission of the instructor. 3 s.h. McHugh

130. *Principles and Methods of Psychological Evaluation.* Prerequisite: Psychology 117. 3 s.h. Wing

132. *The Psychology of Individual Differences.* 3 s.h. Wing

141. *Personality and Behavior Disorder.* Prerequisite: Psychology 100. 3 s.h. Altrocchi, Carson, and Lakin

142. *Instrumental Behavior.* 3 s.h. Guttman and Staddon

144. *The Psychology of Learning.* 3 s.h. Staff

145. *Experimental Approaches to Personality.* Prerequisite: Psychology 100 or permission of the instructor. 3 s.h. Schiffman and Wallach

147. *Experimental Social Psychology.* Prerequisite: Psychology 101 or permission of the instructor. 3 s.h. Jones

148. *Psychology of Perception and Thinking.* 3 s.h. H. Crovitz

149. *Motivation.* 3 s.h. C. Erickson

151. *Psychology and International Relations.* Prerequisites: Psychology 91, 100, or 101, and consent of the instructor. Lakin

152. *Physiological Psychology.* Prerequisites: Physics 1-2 or Chemistry 1-2 or permission of instructor. (Formerly Psychology 112.) 3 s.h. Erickson

153. *Introduction to Biological Psychology.* Prerequisite: Biology 1-2 and Comparative Anatomy, or permission of the instructor. (Formerly Psychology 108.) 3 s.h. Diamond

165. *Personality Theory.* Open to junior and senior majors in Psychology, or by permission of the instructor. Prerequisite: Psychology 100. 3 s.h. Alexander and Kremen

171, 172. *Junior Tutorial.* Prerequisites: 6 s.h. in psychology and permission of Director of Undergraduate Studies. 4 s.h. Staff

173, 174. *Senior Tutorial.* Prerequisite: 12 s.h. in psychology and permission of Director of Undergraduate Studies. 4 s.h. Staff

175, 176. *Independent Research.* Admission requires formulation of a study plan with a faculty supervisor and approval of the Director of Undergraduate Studies. Prerequisite: 9 s.h. of Psychology. 6-12 s.h. Staff

191, 192. *Independent Study and Research—I.* Open only to highly qualified students in the junior year, by permission of the Department. 6 s.h. Staff

193, 194. *Independent Study and Research—II.* Open only to highly qualified students in the senior year, by permission of the Department. 6-12 s.h. Staff

The following courses are open to selected undergraduates with permission of the instructor:

203. *Psychology of Perception.* 3 s.h. Lockhead

204. *Comparative Psychology.* 3 s.h. Staff

210. *Cognition and Higher Mental Processes.* 3 s.h. Staff

213, 214. *Conditioning and Learning.* 6 s.h. Guttman

215. *Developmental Psychology.* 3 s.h. Borstelmann

216. *Biological Psychology.* 3 s.h. Diamond

217. *Research Methods in Social Psychology.* 3 s.h. Linder

218. *Social Psychology.* 3 s.h. Jones

220. *Physiological Bases of Behavior.* 3 s.h. Staff

225. *Personality and Experimental Dynamics.* 3 s.h. Staff

234. *Seminar in Personality.* 3 s.h. Wallach

236. *Theoretical Psychology.* 3 s.h. H. Crovitz

237. *Functional Neurophysiology.* 3 s.h. Erickson

238. *The Electroencephalogram and Psychological Function.* 3 s.h. Obrist

239. *Behavioral Correlates of Brain Damage in Man.* 3 s.h. Thompson

245, 246. *Personality Theory and Assessment.* 6 s.h. Alexander, Kremen, and Schiffman

292. *History of Psychology.* 3 s.h. Diamond

Departmental Major

Prerequisite. Psychology 91 or equivalent.

Major Requirements. 24 semester hours in psychology, including Psychology 91, 117, and a minimum of two courses numbered above 140. Beginning with majors graduating in 1969, in place of the requirement of six hours of courses numbered above 140, students will be required to take at least one of the following courses: 142, 144, 145, 147, 148, 152.

Related Work. 18 semester hours which may include certain courses in chemistry, economics, education, English, linguistics, mathematics, philosophy, physics, political science, sociology-anthropology, and zoology for the A.B. degree. For the B.S. degree, all 18 s.h. must be in the natural sciences.

Religion

Professor Langford, *Chairman*; Associate Professor Phillips, *Director of Undergraduate Studies*; Assistant Professor Partin, *Supervisor of Freshman Instruction*; Professors Murphy and Price; Associate Professors Bradley, Clark, Jones, Osborn, McCollough, Sullivan, and Wintermute; Assistant Professors Fousek, Isenberg, Kort, Pearson, Ricketts; Visiting Assistant Professor Jenks; Instructor Lord; Lecturer Shows

The purpose of the undergraduate program of instruction in religion is to engage the student in a study of religion, its nature and historical manifestations. Since the Judaeo-Christian tradition is the dominant religious influence in the history of Western culture, an historical-critical examination of its primary sources, Old and New Testaments, is the basis of the required study in religion.

The Department sees its task as integral to that of a liberal education. The inclusion of the study of religion in the University recognizes the integrity of the subject matter and its essential relation to the other humanities. It serves the cause of humanistic education furthermore by keeping alive fundamental and ultimate questions which are inherent in its subject matter and which can be engaged responsibly in the academic study of religion.

Students who have fulfilled the uniform course requirement in religion may take only courses numbered 100 and above.

1-2. *The English Bible.* Open only to freshmen. 6 s.h. Staff

43, 44. *Tutorial.* Religion 1-2 must accompany the Tutorial. 1 s.h. each semester. Staff

51-52. *The English Bible.* Not open to freshmen, or to students who have received credit for Religion 1-2. 6 s.h. Staff

55. *The Religion of the Bible.* Religion 55 must be followed by one of the following: Religion 65, 85, or 93. Not open to freshmen, or to students who have received credit for Religion 1-2 or 51-52. 3 s.h. Staff

65. *Jesus: The Man and His Message.* Prerequisite: Religion 55. Not open to students who have completed the uniform course requirements in religion. See Religion 121. 3 s.h. Staff

85. *Introduction to Christian Ethics.* Prerequisite: Religion 55. Not open to students who have completed the uniform course requirements in religion. See Religion 152. 3 s.h. Clark and McCollough

93. *Survey of the World's Living Religions.* Prerequisite: Religion 55. Not open to students who have completed the uniform course requirements in religion. See Religion 175. 3 s.h. Bradley, Partin, and Sullivan

100. *Principles of Investigation.* Required of all majors; open to others. 1 s.h. Wintermute

105. *The Religion of the Bible.* Open only to juniors and seniors who have received no previous credit in Religion courses. This course must be followed by one of the following: Religion 111, 121, 123, 152, or 175. 3 s.h. Staff

111. *The Prophets of the Old Testament.* 3 s.h. Murphy and Wintermute

115. *The Book of Job in World Literature.* 1 s.h. Murphy

121. *The Mission and Message of Jesus.* Not open to students who have received credit for Religion 65. 3 s.h. Pearson and Price

123. *The Life and Letters of Paul.* 3 s.h. Isenberg, Pearson, and Price

131, 132. *History of the Christian Church Through the Reformation.* 3 s.h. each semester. Fousek

133. *History of Christianity Since the Reformation.* 3 s.h. Fousek

135. *The Correspondence of the Great Fathers of the Church.* Prerequisite: Religion 131 or permission of instructor. 3 s.h. Fousek

137. *Christianity in America.* 3 s.h. Jones

138. *Contemporary Religions in the United States.* 3 s.h. Phillips

140. *Christian Beliefs.* 3 s.h. Langford

144. *Problems of Religious Thought.* 3 s.h. Langford

149. *Current Interpretations of Christianity.* 3 s.h. Osborn

152. *Christian Ethics.* Not open to students who have received credit for Religion 85. 3 s.h. Clark and McCollough

154. *Ethics and Modern Technology.* 3 s.h. Clark

156. *Christian Marriage and the Family.* 3 s.h. Phillips

171. *Religions of the Ancient Near East.* 3 s.h. Wintermute

172. *Religious Quests of the Greco-Roman World.* 3 s.h. Pearson and Wintermute

175. *Non-Christian Religions of the Modern World.* Not open to students who have received credit for Religion 93. 3 s.h. Bradley, Partin, Ricketts, and Sullivan

176. *World Religions and Social Change.* 3 s.h. Bradley

178. *Myth and Symbol.* 3 s.h. Partin

179. *Mysticism: Sacred and Profane.* Prerequisite: Religion 93 or 175. 3 s.h. Sullivan

180. *Psychology and Religion.* 3 s.h. Shows

187. *Religious Values in Classical and European Literature.* 3 s.h. Kort

188. *Recent Literature and Its Religious Implications.* 3 s.h. Kort

189. *Man in Modern Prophetic Thought.* 3 s.h. McCollough

191, 192. *Independent Study.* Open only to highly qualified students in the junior year, by permission of the Department. 6 s.h.

193, 194. *Independent Study.* Open only to highly qualified students in the senior year, by permission of the Department. 6-12 s.h.

195-196. *Honors Research.* 6 s.h. Staff

Senior Seminars

The following seminars parallel the five categories of courses offered in the department. They afford opportunities for more intensive reading and individual research. To be eligible for a seminar the student (major or non-major) must have completed at least one course in this area or pass the qualifying examination on the departmental reading list in that category. Each seminar will be offered as frequently as student demand and available personnel permit.

199. *(See University Course.)*

203. *Biblical Studies.* 3 s.h.

204. *Church History.* 3 s.h.

205. *Theology and Ethics.* 3 s.h.

206. *Christianity and Culture.* 3 s.h.

207. *History of Religions.* 3 s.h.

For Seniors and Graduates

210. *Contemporary British Theology.* Prerequisite: permission of instructor. 3 s.h. Langford

228. *The Theology of the Gospel and the Epistles of John.* Prerequisite: permission of instructor. 3 s.h. Price

248. *The Theology of Karl Barth.* Prerequisite: permission of instructor. 3 s.h. Osborn

279. *Religions of East Asia.* Prerequisite: permission of instructor. 3 s.h. Sullivan

285. *Origins of Indian Civilization.* (Also listed as History 285.) Prerequisite: permission of instructor. 3 s.h. Sullivan

293. *Sociological Analysis of Religion.* 3 s.h. Clark

294. *Institutional Analysis of Religious Bodies.* 3 s.h. Clark

Departmental Major

Prerequisite. Completion of the uniform course requirement in religion. (The sequence Religion 1-2 or 51-52 is recommended.)

Major Requirements. Twenty-five semester hours selected as follows:

1. Religion 100 (to be taken in the semester after becoming a major).
2. Three hours from each of the following categories: (A major may fulfil, without credit, the requirement in any one of these areas by passing the departmental examination of the basic book list for that category).
   (a) Biblical studies: 111, 121, 123, 228
   (b) Church history: 131, 132, 133, 137, 138
   (c) Theology and ethics: 140, 149, 152, 154, 156, 210, 248
   (d) Christianity and culture: 144, 187, 188, 189
   (e) History of religions: 171, 172, 175, 176, 178, 179, 279, 285
3. Three hours in one course numbered above 200.
4. At least six hours elected from the departmental curriculum.

Related Work. Eighteen semester hours, including a minimum of six hours in each of two departments. There is no restriction in principle as to departments in which related work may be taken. The departmental major adviser will take into consideration the vocational objective of the student and the need to select courses which will strengthen his major work.

The Department offers work leading to graduation with distinction which is normally begun in the junior year. See the section on graduation with distinction in this *Bulletin.*

Romance Languages

Professor Fein, *Chairman*; Associate Professor Grant, *Director of Undergraduate Studies in French*; Professor Davis, *Director of Undergraduate Studies in Spanish*; Associate Professor Hull, *Supervisor of Language Instruction;* Professors Dow, Fowlie, Herrero, Predmore, and Wardropper; Associate Professors Cordle, Tétel, Torre, and Vincent; Assistant Professors Barlow, Bryan, Cox, Dow, Hogsett, Miller, Périvier, Ripley, Salchenberger, Tate, and Thiher; Instructors Cypess and Murray; Bowman

Cheeseman, Collins, Fiola, Foy, Frasure, Hahn, Humphrey, Keane, Looney, O'Keefe, Spencer, and Wright

French 63-64 and Spanish 63-64 are the prerequisites for all elective courses. Students who, by reason of foreign residence, have had special opportunities in French or Spanish must be classified by the Director of Undergraduate Studies.

French

1-2. *Elementary French.* 8 s.h. Hull and Staff

63-64. *Intermediate French.* Prerequisite: French 1-2 or placement test. 8 s.h. Vincent and Staff

91, 92. *Introduction to French Literature.* Prerequisite: French 63-64 or equivalent. 6 s.h. Cordle and Staff

97. *Spoken French.* Does not satisfy the minimum uniform requirement. Prerequisite: French 64. 3 s.h. Dow and Staff

100. *Masterworks of French Literature.* Open only to freshmen, through the Advanced Placement Program or by invitation of the department. 3 s.h. Hogsett

104. *The Sixteenth Century.* 3 s.h. *Vincent and Tétel*

105. *Explication De Textes.* For students who have taken 91 and 92. 3 s.h. Fowlie and Thiher

108. *French Romanticism.* 3 s.h. Grant and Ripley

109. *Toward Modernism in French Poetry.* 3 s.h. Barlow

111. *French Drama of the Nineteenth Century.* 3 s.h. Dow

112. *French Drama of the Twentieth Century.* 3 s.h. Dow

114. *Diderot.* 3 s.h. Hogsett

115. *The Nineteenth-Century Novel.* Not open to students taking French 221 or 222. 3 s.h. Grant

117. *Masterpieces of French Medieval Literature.* 3 s.h. Ripley

119. *French Drama of the Seventeenth Century.* 3 s.h. Périvier

120. *Seventeenth-Century Poetry, Novel, and Rhetoric.* 3 s.h. Périvier

121. *The French Enlightenment.* 3 s.h. Tate

122. *The Novel in the Eighteenth Century.* 3 s.h. Hogsett

127. *Advanced Composition and Conversation.* Prerequisite: 97 or consent of the instructor. 3 s.h. Mrs. Bryan, Mrs. Dow

133, 134. *Contemporary French Life and Thought.* 6 s.h. Cordle

191, 192. *Independent Study.* Open only to highly qualified juniors by permission of the Department. 6 s.h.

193, 194. *Independent Study.* Open only to highly qualified seniors by permission of the Department. 6 s.h.

209. *Advanced Composition and Syntax.* 3 s.h. Hull

210. *French Phonetics.* 3 s.h. Hull

213. *French Literature of the Seventeenth Century.* 3 s.h.

214. *French Literature of the Seventeenth Century.* 3 s.h.

217. *Mallarmé and Rimbaud.* 3 s.h. Fowlie
219. *Old French Literature.* 3 s.h. Vincent
221. *The Nineteenth-Century French Novel.* 3 s.h. Grant
222. *The Nineteenth-Century French Novel.* 3 s.h. Grant
223. *French Literary Criticism.* 3 s.h. Fowlie
224. *History of the French Language.* 3 s.h. Hull
225, 226. *From Renaissance to Baroque in French Literature of the Sixteenth Century.* 6 s.h. Tétel
228. *French Poetry of the Twentieth Century.* 3 s.h. Fowlie
233. *Contemporary French Theatre.* 3 s.h. Fowlie
234. *Proust.* Designed for graduates, but may be taken by qualified seniors and by a limited number of juniors with the permission of the instructor. 3 s.h. Fowlie
236. *Baudelaire.* 3 s.h. Fowlie
241, 242. *French Literature and Thought in the Age of Enlightenment.* 6 s.h.
245. *French Literature of the Twentieth Century.* 3 s.h. Cordle
246. *French Literature of the Twentieth Century.* 3 s.h. Cordle

Italian

1-2. *Elementary Italian.* 8 s.h. Salchenberger
101, 102. *Masterworks of Italian Literature in English Translation.* 6 s.h. Salchenberger
181-182. *Italian.* Completion of the second college year of another foreign language will normally be required as a prerequisite. 6 s.h. Tétel and Salchenberger
183, 184. *Readings in Italian Literature.* Prerequisite: Italian 181-182 or a knowledge of Italian. 6 s.h. Salchenberger
288. *The Renaissance.* 3 s.h. Tétel

Portuguese

181-182. *Portuguese.* Completion of the second year of another foreign language will normally be required as a prerequisite. 6 s.h. Miller
185, 186. *Conversation.* Prerequisite: Portuguese 181-182 or permission of the instructor. 1 s.h. Miller

Spanish

1-2. *Elementary Spanish.* 8 s.h. Miller and Staff
63-64. *Intermediate Spanish.* Prerequisite: Spanish 1-2 or placement test. 8 s.h. Cox and Staff
91, 92. *Introduction to Spanish Literature.* Prerequisite: Spanish 63-64 or equivalent. 6 s.h. Herrero and Staff

97. *Spoken Spanish.* Does not satisfy the minimum uniform requirement. Prerequisite: Spanish 64. 3 s.h. Staff

156. *Representative Writers of Spanish-American Literature.* 3 s.h. Fein

161. *Spanish Literature of the Renaissance and the Baroque.* 3 s.h. Miller

162. *Spanish Romanticism.* 3 s.h. Torre

163. *The Generation of 1898.* 3 s.h. Herrero

165. *Analysis of Great Spanish Authors.* 3 s.h. Wardropper

166. *Spanish Realism.* 3 s.h. Davis

167. *Golden Age Literature: Cervantes.* 3 s.h. Predmore

176. *Advanced Conversation.* Prerequisite: Spanish 97 or permission of the instructor. 3 s.h. Torre

191, 192. *Independent Study.* Open only to highly qualified juniors by permission of the Department. 6 s.h.

193, 194. *Independent Study.* Open only to highly qualified seniors by permission of the Department. 6 s.h.

251. *The Origins of the Spanish Novel.* 3 s.h. Wardropper

252. *Spanish Lyric Poetry Before 1700.* 3 s.h. Wardropper

253. *The Origins of the Spanish Theater.* 3 s.h. Wardropper

255. *Modern Latin-American Literature.* 3 s.h. Fein

256. *Contemporary Latin-American Literature.* 3 s.h. Fein

257. *Old Spanish Language.* 3 s.h. Davis

258. *Old Spanish Literature.* 3 s.h. Davis

259. *Spanish Phonetics.* Prerequisite: Spanish 176 or permission. 3 s.h. Predmore

260. *Advanced Composition and Syntax.* Prerequisites: Spanish 176 or permission. 3 s.h. Herrero

261. *Nineteenth-Century Novel.* 3 s.h. Davis

262. *Romanticism in Spain.* 3 s.h. Herrero

265. *Golden Age Literature: Cervantes.* 3 s.h. Predmore and Wardropper

266. *Golden Age Literature: The Drama.* 3 s.h. Wardropper

275. *Contemporary Spanish Literature: Essay and Lyric Poetry.* 3 s.h. Predmore and Herrero

276. *Contemporary Spanish Literature: Novel.* 3 s.h. Predmore and Herrero

Romance Languages

218. *The Teaching of Romance Languages.* 3 s.h. Dow

Departmental Major

Prerequisites. French or Spanish: 63-64 or equivalent.

Major Requirements. For French: 97; 127; 209 or 210; and a min-

imum of 15 hours of courses in literature selected from 91 and above. All majors must take 3 s.h. work in the seventeenth century. For Spanish: 97; 176; 259 or 260; and a minimum of 15 hours of courses in literature selected from 91 and above including six hours above 200. All majors must take one of the following: 161, 167, 251, 252, 253, 265, 266.

The Department offers work in the junior and senior years leading to graduation with distinction. See the section on Honors in this *Bulletin*.

Related Work. Majors in Romance Languages will select, with approval of the Director of Undergraduate Studies, appropriate courses from the following fields: (1) other languages and literature; (2) history; (3) philosophy; (4) appreciation courses in music and art; (5) linguistics; and occasionally from other fields deemed suitable.

Russian

For courses in Russian, see *Slavic Languages and Literatures.*

Slavic Languages and Literatures

Associate Professor Krynski, *Chairman*; Associate Professors Jezierski and Swan; Assistant Professors M. Pavlov, H. Pavlov, Hankin, and Apte; Instructor S. Prost

1-2. *Elementary Russian.* 8 s.h. Staff

63-64. *Intermediate Russian.* Prerequisite: Russian 1-2, or two years of high school Russian. 8 s.h. Staff

91, 92. *Advanced Russian.* Prerequisite: Russian 63-64, or equivalent. 6 s.h. M. Pavlov

101, 102. *Russian Literature and Culture Through the Nineteenth Century.* 6 s.h. Jezierski

105. *The Russian Theatre and Drama.* 3 s.h. Jezierski

179. *Twentieth-Century Russian Prose.* Prerequisite: Russian 1, 2, 63, 64, or permission of instructor. 3 s.h. Krynski

180. *Masterpieces of Russian Literature of the Nineteenth Century.* Prerequisite: permission of instructor. 3 s.h. Krynski

181. *Modern Russian Poetry.* Prerequisite: at least three semesters of Russian, or permission of instructor. 3 s.h. Jezierski

191, 192. *Independent Study.* Open only to highly qualified students by permission of the Department. 6 s.h.

201, 202. *The Novelists of Nineteenth-Century Russia.* 6 s.h. Krynski

207. *Soviet Literature and Culture.* 3 s.h. Jezierski

212. *Pushkin.* Prerequisite: Russian 101, or the instructor's permission. Readings in English or Russian. 3 s.h. Jezierski

215, 216. *Advanced Composition and Syntax.* Prerequisite: Russian 91, 92, or permission of instructor. 6 s.h. M. Pavlov

224. *The Russian Short Story—Eighteenth Century to the Present.* 3 s.h. Jezierski

225. *Leo Tolstoy.* 3 s.h. Jezierski

227. *Gogol.* 3 s.h. Jezierski

230. *Chekhov.* 3 s.h. Krynski

232. *Fyodor Dostoevsky.* 3 s.h. Krynski

233. *Ivan Turgenev.* 3 s.h. Krynski

SL 204. *Polish Literature of the Twentieth Century.* 3 s.h. Krynski

SL 205. *The Structure of Polish in Relation to Russian.* 3 s.h. Krynski

SL 206. *Readings in Contemporary Polish Prose in the Original.* Krynski

SL 236. *Russian and Polish Romanticism.* 3 s.h. Krynski

Departmental Major

Prerequisite. Russian 1-2.

Major Requirements. Russian 63-64 and 18 semester hours in the department including 91-92 and at least 6 semester hours of senior-graduate courses.

Related Work. 18 semester hours chosen with the approval of the Department from the humanities, history and the social sciences.

Sociology and Anthropology

Professor McKinney, *Chairman*; Associate Professor Roy, *Director of Undergraduate Studies*; Professors Back, Kerckhoff, La Barre, Maddox, Smith, Tiryakian, and Thompson; Associate Professors McCormack, Palmore, Preiss, Rowe; Assistant Professors Apte, Bowers, Crocker, Prost

Sociology

Sociology 91 or special permission of the instructor or the Director of Undergraduate Studies, is a prerequisite for all sociology courses at the 200 level.

91. *Introduction to Sociology: Concepts and Procedures.* 3 s.h. Open to freshmen. Staff

132. *Introduction to Sociological Research.* 3 s.h. Staff

136. *Sociology of Modern Africa.* 3 s.h. Tiryakian

139. *Comparative Social Structure.* 3 s.h. Staff

141. *Introduction to Population and Human Ecology.* 3 s.h. Staff

142. *The Sociology of Mass Communication.* 3 s.h. Smith

143. *Deviant Social Behavior.* 3 s.h. Preiss
145. *Urban Sociology.* 3 s.h. Smith
146. *Industry and Society.* 3 s.h. Roy
150. *The Family.* 3 s.h. Kerckhoff and Roy
151. *Sociology of Religion.* 3 s.h. Tiryakian
153. *Sociology of the South.* 3 s.h. Thompson
154. *The Sociology of the Arts.* 3 s.h. Back
155. *Introduction to Industrial Sociology.* 3 s.h. Roy
159. *The Negro in America.* 3 s.h. Thompson and Palmore
172. *Collective Behavior and Social Movements.* 3 s.h. Kerckhoff
193, 194. *Independent Study.* Graduation with distinction in the department requires a minimum of 3 hours credit. Open to qualified students in the junior and senior years by permission. 3 s.h. Staff
199. *The Changing South.* (See Interdisciplinary Course 199.)
241. *Social Stratification.* 3 s.h. Roy
242. *The Sociology of Occupations and Professions.* 3 s.h. McKinney and Roy
243. *Population Dynamics and Social Change.* 3 s.h. Staff
247. *Community and Society.* 3 s.h. Thompson
251. *The Sociology of Modernization.* 3 s.h. Staff
253. *Social Institutions.* 3 s.h. Thompson
255. *Race and Culture.* 3 s.h. Thompson
259. *Religion and Social Change.* Prerequisite: Anthropology 264, Sociology 151, or the equivalent. 3 s.h. Tiryakian
272. *The Socialization Process.* 3 s.h. Kerckhoff
275. *Social Attitudes and Individual Behavior.* 3 s.h. Back and Kerckhoff
278. *Social Structure and the Life Cycle.* 3 s.h. Maddox
282. *Principles of Sociological Analysis.* 3 s.h. McKinney
295. *Methodology in Sociology.* 3 s.h. Smith and Back
297. *Statistical Analysis in Sociology.* Prerequisite: Mathematics 233 or an equivalent course or permission of the instructor. 3 s.h. Staff

Departmental Major in Sociology

Major Requirements. Twenty-four semester hours of Sociology including Sociology 91 and at least six semester hours in the Senior-Graduate courses.

Related Work. A minimum of eighteen semester hours, at least twelve of which are normally chosen from two of the following fields: economics, education, history, mathematics, political science, and psychology. Additional courses in other fields may also be elected as related work when indicated by the educational requirements of the student and approved by the departmental adviser.

Anthropology

93. *General Anthropology.* 3 s.h. Staff

94. *Cultural Anthropology.* 3 s.h. Staff

101, 102. *Introduction to the Civilizations of Southern Asia.* (See Interdisciplinary Course 101, 102.)

121, 122. *World Ethnography.* 3 s.h. Staff

124. *Peoples of the World: American Indian.* 3 s.h. La Barre

126. *Peoples of the World: Oceania.* 3 s.h. Bowers

128. *Peoples of the World: Asia.* 3 s.h. McCormack and Rowe

130. *Cultural Change and Stability.* 3 s.h. Rowe

134. *Political Anthropology.* 3 s.h. Rowe and Crocker

137. *Comparative Social Organization.* Prerequisite: Anthropology 94 or permission of the instructor. 3 s.h. McCormack

160. *The Anthropology of Agriculture.* 3 s.h. Bowers

193. *Independent Study.* Open only to highly qualified students in the senior year, by permission of the Director of Undergraduate Studies. 3 s.h. Staff

199. *The Changing South.* (See Interdisciplinary Course 199.)

220. *Society and Culture in India.* 3 s.h. Rowe and McCormack

222. *Topics in African Anthropology.* 3 s.h. Staff

231. *Physical Anthropology.* (Also listed as Anatomy 231 in *Graduate School Bulletin.*) 3 s.h. Buettner-Janusch

232. *Human Genetics.* Prerequisites: Anatomy 231, Zoology 131 (or an elementary course in biology including genetics), or permission of instructor. (Also listed as Anatomy 232 and Zoology 232 in *Graduate School Bulletin.*) 3 s.h. Buettner-Janusch

238. *Language and Society.* 3 s.h. Apte and McCormack

249. *Economic Anthropology.* 3 s.h. Rowe and Crocker

260. *Linguistic Anthropology: Phonemics.* Prerequisite: permission of the instructor. 3 s.h. Apte

261. *Linguistic Anthropology: Morphology and Syntax.* Prerequisite: Anthropology 260 or permission of the instructor. 3 s.h. Apte

262. *Anthropology of Law.* 3 s.h. Crocker

263. *Primitive Art and Music.* 3 s.h. La Barre

264. *Primitive Religion.* 3 s.h. La Barre and Crocker

265. *Personality and Society.* 3 s.h. La Barre

266. *Personality and Culture.* 3 s.h. La Barre and Rowe

276. *Analysis of Kinship Systems.* 3 s.h. McCormack and Crocker

280, 281. *Seminar in Selected Topics.* Permission of the instructor. 6 s.h. Staff

291, 292. *Anthropological Theory.* 6 s.h. Rowe

Departmental Major in Anthropology

Major Requirements. Twenty-four semester hours of work in Anthropology including Anthropology 93-94 and at least six semester hours in the Senior-Graduate courses.

Related Work. A minimum of eighteen semester hours, at least twelve of which are normally chosen from two of the following fields: anatomy, art, botany, economics, history, mathematics, political science, psychology, and zoology. Additional courses in other fields may be elected as related work when indicated by the educational requirements of the student and approved by the departmental adviser.

Spanish

For courses in Spanish, see *Romance Languages.*

University Courses

Fall Semester

199.1. *Comparative Politics: Western Europe.* Cole

199.4. *Social Impact and Response in the Developing World.* 3 s.h. Himes

Zoology

Professor Horn, *Chairman*; Professor Bailey, *Director of Undergraduate Studies*; Associate Professor Wainwright, *Supervisor of Freshman Instruction*; Professors Bookhout, Buettner-Janusch, Fluke, Gregg, Klopfer, Livingstone, Schmidt-Nielsen, and Wilbur; Adjunct Professor Stefánsson; Associate Professors Costlow, Gillham, Hunter, Nicklas, Tucker, Vernberg, and Ward; Assistant Professors Doyle and Vogel; Instructors Aulie, Covalt-Dunning, Osgood, and Weigle

1-2. *Biology.* (See course listing under Biology 1-2.)

53. *Comparative Vertebrate Anatomy.* Prerequisites: Biology 1-2. 4 s.h. Horn

71. *Heredity and Eugenics.* Prerequisite: one year of biology. 3 s.h. Ward

92. *General Embryology.* Prerequisite: Biology 1-2. Recommended: Zoology 53. 4 s.h. Gregg

103. *Principles of Ecology.* Prerequisites: Biology 1-2, Mathematics 17 or 21. 4 s.h. Livingstone

109. *Evolution.* Prerequisite: Genetics or consent of the instructor. (Combined course with Botany 240.) 3 s.h. Klopfer and Stone (Botany)

110. *Introduction to Genetics.* Prerequisite: one year of biology or consent of instructor. 3 s.h. With laboratory—4 s.h. Ward and Gillham

120. *Ornithology.* Prerequisite: one year of biology. Zoology 53 recommended. 4 s.h. Bailey

131. *Human Evolution.* Prerequisites: a year of biology and a course in genetics. (Combined course with Anthropology 231.) 3 s.h. Buettner-Janusch

151. *Principles of Physiology.* Prerequisites: at least a year of zoology and a year of chemistry. 4 s.h. Tucker

161. *Animal Parasites.* Prerequisite: one year of zoology. 4 s.h.

174. *Animal Diversity.* Prerequisites: Biology 1-2. 4 s.h. Wainwright

196. *Seminar.* Open to junior and senior departmental majors. 2 s.h. Tucker and Staff

197, 198. *Special Problems.* Open to senior and junior majors with permission from the Director of Undergraduate Studies and the instructor under whom the student wishes to work. Not more than 4 s.h. may be counted toward major work. Staff

For Seniors and Graduates

201. *Animal Behavior.* Prerequisites: physiology, genetics, and evolution, or consent of instructor. 3 s.h.; 4 s.h. with laboratory. Klopfer

203. *Marine Ecology.* 6 s.h. (Given at Beaufort.) Staff

210. *Experimental Genetics.* Prerequisite: consent of instructor. 4 s.h. Ward and Staff (Genetics Program)

214. *Biological Oceanography.* Prerequisites: a course in invertebrate zoology, ecology, marine biology or an appropriate equivalent; chemistry through organic; one year of physics and mathematics. 3 s.h.; 4 s.h. with laboratory. Staff

215. *General Physical and Chemical Oceanography.* Prerequisites: one year each of physics and chemistry, Mathematics 22 or equivalent. 6 s.h. (Given at Beaufort only.) Stefánsson

216. *Limnology.* Prerequisites: one year each of biology, chemistry, and physics, and Mathematics 21; or permission of instructor. 4 s.h. Livingstone

218. *Oceanographic Techniques.* 2 s.h. (Given at Beaufort.)

224. *Vertebrate Zoology.* Prerequisite: Zoology 53. 4 s.h. Bailey

228. *Experimental Embryology.* 4 s.h. Gregg

232. *Human Genetics.* Prerequisites: Zoology 131 or permission of the instructor. 3 s.h. Buettner-Janusch

238. *Systematic Zoology.* Prerequisites: Biology 1-2. 4 s.h. Bailey

243. *Cytology.* Prerequisite: one year of biology. (Combined course with Botany 243.) 4 s.h. Anderson (Botany) and Nicklas

244. *Topics in Cell Structure and Function.* Prerequisite: Zoology 243

(Botany 243) or equivalent and permission of the instructor. 2 s.h. Nicklas and Moses (Anatomy)

245. *Radiation Biology.* Prerequisites: College physics, mathematics, and organic chemistry. 3 s.h., or 4 s.h. with laboratory. Fluke

246. *Physical Biology.* Prerequisites: Mathematics 22, Chemistry 151, Physics 41, and one and one-half years of college biology or consent of the instructors. 3 s.h. or 4 s.h. with optional laboratory. Fluke and Staff

247. *Biological Nucleonics.* Prerequisites: consent of instructor and one year each of college biology, chemistry and physics. 3 s.h. Fluke and Woods (Forestry)

248. *Introductory Biochemistry.* Prerequisites: Chemistry 151, one year of college physics (second semester may be concurrent), Mathematics 22, or consent of the instructors. 3 s.h. Biochemistry Staff

250. *Physiological Ecology of Marine Animals.* Prerequisite: Zoology 151 or equivalent. 6 s.h. (Given at Beaufort only.) Vernberg

252. *Comparative Physiology.* Prerequisite: Zoology 151 or equivalent. 4 s.h. K. Schmidt-Nielsen

271. *Cellular Physiology.* Prerequisites: two years of biology and at least one year of chemistry. 4 s.h. Wilbur and Staff

274. *Invertebrate Zoology.* Prerequisites: Biology 1-2. 6 s.h. (Given at Beaufort only)

278. *Invertebrate Embryology.* Prerequisite: Zoology 92. 4 s.h. Bookhout

Marine Laboratory. The following courses are given at Duke University Marine Laboratory, Beaufort, N. C.: 203, Marine Ecology; 214, Biological Oceanography; 215, General Physical and Chemical Oceanography; 250, Physiological Ecology of Marine Animals; 274, Marine Invertebrate Zoology. Consult the announcement of the Duke University Marine Laboratory.

Departmental Major

Prerequisites. Biology 1-2.

Major Requirements (for both A.B. and B.S. degrees). A minimum of 24 s.h. of zoology. At least one course in each of the following three areas is urged: morphology (53, 92, 274, or 278), physiology (151, 252 or 271), and genetics (71 or 110).

With the prior approval of the Director of Undergraduate Studies, up to 6 s.h. of advanced work in the natural and formal sciences, other than zoology, may be counted toward the 24 s.h. of the zoology major.

Related Work. For the A.B. degree: at least one year of chemistry with additional work usually chosen from courses in botany, chemistry, geology, mathematics, or physics. The language requirement will preferably be met by French, German, or Russian. For the B.S. degree: Chemistry 151 and 152 with additional work chosen from courses in botany,

geology, mathematics or physics. Language requirements may be met by two languages, chosen from German, French, or Russian.

For interdisciplinary programs involving biology see page 11 of this *Bulletin*.

The Department offers work leading to graduation with distinction. See the section on Honors.



The Divinity School

Table of Contents

General Information 1

Courses of Study and Requirements for Degrees 4
- Divinity School Degree Programs 4
- Graduate School Courses 5
- Master of Divinity Degree 6
- Regular Program 6
- Honors Program 9
- Independent Studies Program 11
- Administration of the Curriculum 13
- Master of Religious Education Degree 19
- Master of Theology Degree 20

Programs of Continuing Education 22
- Divinity School Seminars 22
- Henry Harrison Jordan Loan Library 23
- Duke Divinity School Summer Clinics 23
- School for Supply Pastors 24
- Consultation on Task of Theology Today 24
- Other Programs 25

Resources for Study 27
- Library Resources 27
- Corporate Worship 28
- Public Lectures 29
- Lectures and Symposia 29

Community Life 31
- Divinity School Choir 31
- Coordinating Council for Community Life 31
- Other Organizations 32
- Publications 32

Admission 34
- Requirements and Procedures 34
- Pre-Seminary Curriculum 36
- Transfer of Credit 36
- Advanced Standing 37
- Admission on Probation 37
- Ministerial and Professional Qualifications 38

Financial Information 40
- Fees and Expenses 40
- Student Health 42
- Living Accommodations 42
- Motor Vehicles 44
- Student Aid 45
- Financial Resources 46
- Financial Aid Resources 48

Field Education 52

Courses of Instruction 54

General Information

Historical Statement

The Indenture of Trust signed on December 11, 1924, by Mr. James B. Duke, which established Duke University, mentioned first among its objects the training of ministers of the Gospel. The Divinity School was, accordingly, the first of the graduate professional schools to be organized. Its work began with the year 1926-1927, the formal opening exercises being held on November 9, 1926.

The Reverend Doctor Edmund Davison Soper was the first Dean of the Divinity School. He resigned in 1928 to become President of Ohio Wesleyan University, and was succeeded by the Reverend Doctor Elbert Russell, and the latter in turn in 1941 by the Reverend Doctor Paul Neff Garber. In 1944, Dean Garber was elected to the episcopacy of The Methodist Church, and Doctor Harvie Branscomb assumed the duties of the Dean's office. In 1946, Dean Branscomb became Chancellor of Vanderbilt University, and in 1947 the Reverend Doctor Paul E. Root was elected Dean but died before he could assume the office. The Reverend Doctor Harold A. Bosley became Dean in 1947 and resigned in 1950 to become the pastor of the First Methodist Church, Evanston, Ill. The Reverend Doctor James Cannon was appointed Dean of the Divinity School, March 1, 1951. After a period marked by important administrative integration of the School, Doctor Cannon resigned the duties of deanship, September 30, 1958. The Reverend Professor Robert Earl

Cushman was elected Dean and assumed the responsibilities of the office on October 1, 1958.

The Role of the Divinity School

The Divinity School represents theological inquiry and learning within the greater University. By history and indenture, it stands squarely within the Christian tradition and recognizes its distinctive lineage in, as well as a continuing obligation toward, the United Methodist Church. It has been from its inception ecumenical in aspiration, teaching, and practice. Ecumenical also is the actual membership of its faculty. Educational policy has consistently aspired to nurture a Christian understanding "truly catholic, truly evangelical, and truly reformed."

The presiding purpose of the Divinity School is education for ministry. Ministry in Christ's name to the world increasingly assumes manifold forms. Provision for these variations of ministry is expressly supplied in the curricular resources of the School. However, while the conventional and inherited styles of ministry are now certainly undergoing change, the Divinity School Curriculum continues to prepare students for informed and discriminating discharge of the historic offices of church and congregation through the ministry of Word and Sacrament, pastoral care, and the teaching office. Whatever form or context "the local church" of tomorrow may assume, Divinity School education remains predicated upon the historically grounded probability that these offices will remain.

Under the guidance of this perspective, the Divinity School aspires to prepare adequately qualified students for mature espousal of their vocation, with disciplined intelligence informed by sound learning, and equipped for worthy professional service. This is regarded as a service to the Church, to the world, and, pre-eminently, to the Lord of the Church.

Change in Basic Degree Nomenclature

By action of the General Faculty and the Board of Trustees of Duke University, the basic theological degree offered by the Divinity School was changed effective June 1968. All students who fulfill the requirements for the basic degree and graduate at the June 1968 Commencement, will receive a Master of Divinity degree. This nomenclature will replace that of the Bachelor of Divinity, the degree hitherto granted to students who fulfilled their requirements for the basic theological degree. A new curriculum for the Master of Divinity degree was instituted for the first time in the fall semester of the academic year 1967-68.

The Relation of the Divinity School to Duke University

The Divinity School is an integral part of the University and shares fully in its activities, privileges, and responsibilities. The Sunday services in the University Chapel give Divinity School students an opportunity to hear each year a number of leading ministers of the country. The University Libraries make easily accessible a rich collection of 1,900,000 volumes. Selected courses in the Graduate School of Arts and Sciences and in the professional schools are open to Divinity School students without payment of additional fees. The general cultural and recreational resources of the University are available to them on the same basis as to other students.



Courses of Study and Requirements for Degrees

Degree Programs Offered by the Divinity School

The academic work of the Divinity School embraces three degree programs. These are the basic degree program ordinarily of three academic years, leading to the Master of Divinity degree (M.Div.); a one-year program beyond the basic degree, the Master of Theology (Th.M.); and a third program of two academic years leading to the degree of Master of Religious Education (M.R.E.). All are graduate-professional degrees. Admission to candidacy for the Master of Divinity and Master of Religious Education degrees presupposes the completion of the A.B. or its equivalent.

Students preparing for ordination to the Christian ministry, and requiring appropriate graduate-professional education, will regularly enroll for the Master of Divinity degree. Students whose acquired academic standing, under this basic degree program, entitles them to further specialized study may advance their command of selected theological disciplines by applying for an additional year of studies leading to the Master of Theology degree. Together, these two degree programs constitute a sequence. Although the Master of Divinity degree fulfills requirements for ordination by prevailing ecclesiastical standards, the

Th.M. program may assist in assuring a larger measure of professional preparation. Application for admission to the Th.M. program is open to graduates of other schools who have completed the basic theological degree.

The Master of Religious Education program is designed to prepare qualified persons, ordinarily not seeking ordination, for a ministry of Christian education in local churches or other contexts. The course of study is arranged to provide grounding in Biblical, historical, and theological disciplines as essential background for instruction in and exercise of professional competence in curricular planning, teaching methods, and supervision of educational programs for various age groups.

The specific requirements for each of these degrees are found in the succeeding pages. It is evident that completed course work cannot be credited toward more than one degree. Reciprocal transfer of credit for course work taken under either the M.Div. or the M.R.E. program requires the permission of the Dean.

Doctoral Studies Accredited by the Graduate School of Arts and Sciences

The Divinity School provides a substantial body of course offerings at an advanced level in Biblical, historical, and systematic and contemporary theological disciplines that are accredited alike by the Graduate School of Arts and Sciences and the Faculty of the Divinity School, and lead to the Doctor of Philosophy degree. Sharing responsibility with the University Department of Religion for staffing and curricular provision of this course of study, the Divinity School is the principal contributor to the Program of Graduate Studies in Religion. Since, however, the Ph.D. in Religion is certified and awarded under the Graduate School of Arts and Sciences, the doctoral student's admission and matriculation are administered under that division of Duke University.

With few exceptions, most courses in the Divinity School catalogue carrying a "200" number or above and belonging to the fields noted above, are applicable to doctoral programs of study.

Candidacy for the doctoral degree in Religion ordinarily presupposes the holding of the basic theological degree, the B.D. or equivalent. Qualified persons who desire to pursue studies leading to the degrees of M.A. or Ph.D. in Religion, under the administration of the Graduate School of Arts and Sciences, are advised to apply to the Dean of that School. Inquiries concerning fellowships or specific requirements of the Program of Graduate Studies in Religion may be addressed to Professor Waldo Beach, Director, 209 Divinity School.

The Basic Theological Degree—Master of Divinity

A revised course of study leading to the basic theological degree was instituted in the fall of 1967. The Master of Divinity degree is offered under three related but distinguishable curricular arrangements: a *Regular Program* (Program I), an *Honors Program* (Program II), and an *Independent Studies Program* (Program III).

Designed to advance the level of graduate-professional education and to enlarge student initiative, the three programs take account of differing levels of aptitude or of previous academic achievement as well as varying vocational aims or emphases on the part of individual students. The threefold form of the basic degree is, therefore, conceived as a series of stages open in principle to any student who, by exercise of initiative, evident enlarging maturity and achievement, may properly move toward increasing self-direction in graduate-professional studies. A student, for example, may enter as candidate in the *Regular Program*, advance to candidacy in the *Honors Program*, and, perhaps in very exceptional instances, complete his candidacy in the program of *Independent Studies*. He may, however, qualify for the *Honors Program* in his initial, or Junior year by virtue of the level of his undergraduate achievement and on formal approval of the Faculty Committee on Honors, Independent Studies, and Area Concentration.

The Regular Program (Program I)

The threefold curricular pattern, leading to the Master of Divinity degree, presupposes the basic structure of the Regular Program. Accordingly, both the Honors and Independent Studies programs are variants upon it. All three programs, likewise, utilize the provision for Advanced Standing. This permits entering students—qualified by previous undergraduate studies and with a prescribed level of achievement —to begin work in basic disciplines at a higher level than that of the required curriculum by substituting an advanced, but cognate course, for a core course requirement (See Advanced Standing in Admissions section).

To encourage student initiative and maturity and to stimulate studies in depth rather than pluralization of content, the Regular Program prescribes seventy-eight (78) semester hours credit as the requirement for graduation. Six semesters of residential study leading to the basic degree are required. The regularly anticipated academic load, therefore, will be four 3-semester-hour courses in four of the semesters, and five 3-semester-hour courses in two other semesters. Ordinarily, the five-course load will occupy the Fall and Spring semesters of the Middler

year. The delimitation of required hours for graduation entitles both student and instructor to expectations of substantial student investment and accomplishment.

The general features, components, and requirements of the Regular Program together with its proposed schedule are listed below.

General Features of Program I

A total requirement of 78 semester hours for graduation.

A normal academic load of four courses of 3 semester hours in four semesters, and five courses of 3 semester hours in two semesters.

Junior Seminars and Colloquia in the Fall and Spring semesters of the first year.

In Biblical studies: alternative programs for students of Biblical languages (see Language Study, p. 17); English Bible examination necessary for graduation and preparatory studies, without credit.

Special allowances: up to 3 semester hours of credit for Field Education projects under faculty supervision; up to 6 semester hours credit for Independent Study; up to 6 semester hours Clinical or Internship credit; up to 6 semester hours of cognate studies in the Graduate School of Duke University with the permission of the student's adviser and the Dean.

Area Concentration in the Senior year, including 9 semester hours of advanced courses in one area (division or subdivision) of the curriculum.

An Area Examination at the end of the Senior year, with 3 semester hours credit for a reading course or seminar in preparation for the examination.

Synopsis of the Regular Program

Four courses in *Biblical Studies* (Old Testament, New Testament):

Introduction to the Old Testament (O.T. 11)
Early Christian Life and Literature (N.T. 18)
Elective course in Old Testament Interpretation
Elective course in New Testament Interpretation

Four courses in *Historical Studies* (Church History, Historical Theology, American Christianity):

History of the Church to the Protestant Reformation (Ch. 13)
Either Church History 14 or Historical Theology 21
A course in American Christianity (ordinarily A.C. 28)
An elective course (below the 300 level) chosen from the fields of Church History, Historical Theology or American Christianity

Four courses in *Theological Studies* (Christian Theology, Christian Ethics, Christianity and Culture):

Either Types of Religious Philosophy (C.T. 20) or Contemporary Western Culture (C.C. 16)
Introduction to Christian Theology (C.T. 32)
A course in Christian Ethics (ordinarily Ch.E. 27)
An elective course (below the 300 level) chosen from the fields of Christian Theology, Christian Ethics, or Christianity and Culture

Four courses in *Ministry Studies* (The Care of the Parish, Christian Education, The Church at Worship, Pastoral Psychology):

Junior Seminar: The Church and Ministry Today
Three elective courses, one from each of three of the following fields: The Care of the Parish, Christian Education, The Church at Worship (Preaching *or* Worship and Church Music), Pastoral Psychology

One course in *World Christianity* (Missions, Ecumenics, Roman Catholicism)

The Junior Colloquia

Eight or more additional *elective* courses (to constitute a total of 78 hours), including 3 advanced courses as an Area Concentration, and a seminar reading course in preparation for the final Area Examination.

Normal Distribution of Courses

Courses as scheduled below are of three kinds: *core courses, limited electives,* and *elective courses.* Core courses represent foundational studies deemed essential for advancement in the curriculum toward theological understanding and professional fulfillment. Core courses approximate to uniform requirements; however, since the provisions for Advanced Standing and Language Study apply to them primarily, their invariability is to that extent modified.

Limited elective courses both afford and require on the part of the student opportunity for wise choice from among the components of the prescribed curriculum that are not individually specified but fall within the four main divisional groupings of studies.

Elective courses are more nearly free options which are, at the same time, electives governed by the student's prior determination of his academic and professional preferences. These are: (1) the Area Concentration and Examination for the Senior year, and (2) the prevailing vocational or controlling professional aim which his studies properly must serve. The student's organization of program, in consultation with his assigned faculty adviser, must have been largely completed and approved by the time of registration for the Spring semester of the Middler year.

General Academic Program

Master Schedule

Junior Year

Fall Semester	*Spring Semester*
Biblical: O.T. 11	Biblical: N.T. 18
Historical: C.H. 13	Historical: C.H. 14 or H.T. 21
Theological: C.T. 20 or C.C. 16	Theological: C.T. 32
Junior Seminar 9	Junior Seminar 10
Colloquium I	Colloquium II

Middler Year

Biblical: O.T. or N.T. Interpretation	Biblical: N.T. or O.T. Interpretation
Historical: ordinarily A.C. 28	Historical: limited elective
Theological: ordinarily Ch.E. 27	Theological: limited elective
Ministry: limited elective	Ministry: limited elective
Elective	Elective

Senior Year

World Christianity: limited elective	Elective
Ministry: limited elective	Elective
Elective	Elective
Elective	Elective (reading course or seminar for Area Examination)

The General Academic Program constitutes a specific prospectus and proposed ordering of studies regularly applicable to Program I. It also serves as a model or paradigm for both Programs II and III. While these latter programs may vary from it, they nevertheless are answerable to it and to the general requirements and academic objectives it comprehends.

The Honors Program (Program II)

The Honors Program leading to the Master of Divinity degree is open to students admitted to regular course of study who, in virtue of superior undergraduate record and achievement, give promise of capacity for more rapid advancement toward independent utilization of the resources of curriculum, library, and faculty supervision.

Admission Procedures

A student applying for admission to the Divinity School through the office of the Registrar may apply at the same time for admission to the

Honors Program. Procedures and requirements are as follows: (1) The student must submit a "B" or better undergraduate record. (2) His application will be reviewed by the Faculty Committee on Honors and Independent Studies. This committee may require of the student an interview, if necessary, at the time of Fall matriculation. (3) He must submit with the application his scores on the Graduate Record Examination or other comparable test scores as the committee may request.

Notice of the action of the committee will not necessarily be coincident with notice of admission to the Divinity School, since two different committee actions are involved and because of the special procedures involving Honors applicants noted above. However, with submission of all required credentials, and barring the need of an interview, of which the student would be formally notified, the Honors Program Committee will give notice of action not later than April 15 for applicants who have submitted all credentials prior to March 15. Late applications will be acted upon as promptly as possible.

Admission to the Honors Program at the end of the Junior year is provided for and will be contingent upon superior performance in course work (ordinarily at least a "B" average) and the approval by the Honors Program Committee. Applicants completing their course work of the Junior year will apply to the Honors Program Committee, through the office of the Registrar, not later than July 1 preceding their Middler year.

General Features of the Honors Program

Program II shares many of the features of the Regular Program including Advanced Standing and is subject to the same general regulations. Under Program II, however, seventy-two (72) semester hours credit are required for graduation. Program II includes provisions for a "reading out" of some courses and for a greater measure of independent study. The general structure of Program II depends upon the Master Schedule of the General Academic Program (See p. 9) with the variations afforded by the following particular requirements and provisions of Program II.

Synopsis of the Honors Program

Junior Year. The Junior Honors student's program will follow the Regular Program with the following exceptions: (a) The student may "read out" two courses, ordinarily one per semester. (Not applicable to C.T. 32). (b) He may take two advanced courses in the same areas as the specified introductory courses if he is qualified to do so.

Third Semester. (a) The student may choose an advanced course in any of the four areas specified in the Regular Program (Biblical, A.C., Ch.E., Ministry). (b) He may "read out" in any two of the four areas

where that is practicable or permissible. ("Reading out" is generally possible only in introductory courses, not in advanced courses.)

Fourth Semester, Fifth Semester. 9 hours of advanced courses without regard to area distribution, 3 hours of individual study each semester.

Sixth Semester. 6 hours of advanced courses, 6 hours for individual study leading to thesis, or 6 hours for clinical training or internship.

Administration of the Program

The Honors student will be assigned to a faculty Adviser with whom consultation will be imperative. His program of studies is subject to review by the Honors Program Committee at the end of each semester to determine his eligibility for continuance in Program II. His prospective course of study for each succeeding semester requires the approval of both his faculty Adviser and the Chairman of the Honors Program Committee. All programs of study are subject to the review of the Dean and the Committee on Academic Standing.

Students of the Honors Program may in any semester ordinarily register for and receive no more than 12 s.h. credit toward graduation. They may, however, audit or, without requesting credit, register for additional courses. Ordinarily an Honors student is limited to 15 s.h. of course work each semester, including any courses taken in addition to the 12 s.h. described above. Exceptions require approval of the Dean and of the director of the Honors Program. Grades for courses taken without credit become a part of the student's permanent record but do not count toward requirements for graduation.

The Independent Studies Program (Program III)

The Independent Studies Program leading to the Master of Divinity degree is open to a limited number of students of superior ability, strong personal motivation, and somewhat formal goals of scholarship in Divinity. The program allows for a maximum degree of self-direction combined with seasoned counsel and responsible evaluation of progress toward the candidate's stated goals.

Admission Procedures

At any time after notice of admission to the Divinity School but ordinarly not less than 60 days prior to matriculation, a student may submit to the Registrar notice of his desire to apply for the Independent Studies Program. He will submit a 5000-word essay on the purposes which he entertains and the kind of program he believes the Divinity School resources permit him to undertake, and will show how this pro-

gram can contribute to the development he envisions for himself. This shall be at once a device for evaluating his maturity and readiness for such independent studies and a preliminary (though not prejudicial) guide to the formulation of his program of study. At the time of matriculation he will be interviewed by a panel of three faculty members appointed to examine him comprehensively over his baccalaureate studies and his intended program.

Consideration will be given to applications for later admission to Program III from students whose unusual achievement in their first year in Programs I or II demonstrates their ability to undertake the Independent Studies Program.

Program of Study and its Administration

The student in Program III will plan and pursue his program of study with the guidance of a faculty committee of three appointed by the Dean. The chairman of this committee shall be the candidate's Tutor.

1. The guidance committee shall meet with the candidate early in his first semester to determine three major divisions of study in which he shall be subject to qualifying examinations at the beginning of his fifth semester of study. They shall determine the nature (written, oral, practical, or other) of these qualifying examinations, and with help from the relevant faculty, shall indicate the typical scope of materials and basic bibliography of the fields in which he is to be examined, or the practical skills to be acquired.

2. The Tutor, with such assistance from the guidance committee and other faculty as he requires, shall advise, counsel, and direct the candidate, and shall assign short papers which may serve as periodic progress reports to the Tutor and to the candidate himself. Such papers shall be read by the Tutor and, when he deems it advisable, by other members of the committee. The candidate should be in consultation with his Tutor not less than once every two weeks (including the occasions required by his papers).

3. The candidate may attend any classes, lectures, and other formal occasions of instruction, observing amenities of consideration for the instructor and for students enrolled for credit. Normally this would require the permission of the instructor.

4. The candidate shall be subject to a series of examinations:

(a) He shall be examined in appropriate ways at the end of his second semester to determine his progress. This examination should be informal and in no sense exhaustive, seeking rather to determine whether the candidate is making satisfactory progress and fulfilling his promise as anticipated.

(b) He shall be examined, by the end of his fourth semester if

possible, to determine his working competence in Hebrew and in either Greek or Latin.

(c) At the beginning of his fifth semester, he shall undergo qualifying examinations in ways appropriate to his program of study (as indicated above, and as anticipated from an early meeting with his guidance committee).

5. Upon satisfactory completion of his qualifying examinations, and with the approval of his committee and careful guidance of his Tutor, the candidate shall undertake a project of intensive inquiry to consolidate his whole program in light of vocational or professional goals. This project shall eventuate in a thesis or, in the case of projects such as internship or clinical programs or other practical investigations, the written equivalent of a thesis. Satisfactory completion of the thesis or its equivalent, including oral examination by the guidance committee, shall fulfill requirements for graduation.

Transcripts and Grades

When it becomes necessary to supply a transcript of grades for a student in the Independent Studies Program, he will be credited with hours in the divisional fields corresponding to his focus of independent studies. Grades shall be recorded as "A" when he has, in the judgment of the Tutor, performed with distinction or, otherwise, as "B". If at any time a student falls below an acceptable level of performance in the Independent Studies Program he will be advised to return to study of the regular curriculum. In such case he will have placed upon his record credit for the number of hours which he would normally have acquired at this chronological point in his career had he pursued the normal course of study. Hours will be assigned to divisional areas which correspond to the areas of his independent study. Grades for these hours will be determined by his Tutor.

Administration of the Curriculum

General Regulations

1. Full-time students are advised to enroll for core and limited elective courses as specified for the respective semesters of the general academic program.

2. Students in programs leading to either the Master of Divinity or Master of Religious Education degree are required at the time of each registration period to plan their course of study with consultation and approval of their assigned faculty advisers.

3. The schedules or academic programs of all students in candidacy for Divinity School degrees are subject to the review and approval of the Dean and the Committee on Academic Standing.

4. Student Pastors in candidacy for the Master of Divinity degree under any of the three programs of study are advised that their program will normally require a fourth academic year. Modification of this schedule of expectancy will be treated with reserve and will require the express approval of the Dean on recommendation of the Dean of Students and the Associate Director of Field Education.

(a) Students with pastoral charges, or comparable extra-curricular responsibilities, will normally enroll for not less than seven (7) nor more than ten (10) semester hours.

(b) An entering student desiring to serve as a student pastor must have the approval of the Director of Field Education and must participate in an Orientation and Training Program (see "Field Education," page 52).

(c) Students who accept pastoral charges in their Middler or Senior years are required to have the prior approval of the Dean of Students on recommendation of the Associate Director of Field Education. Such students will be required to restrict their course work in accordance with the regulation stated above (4a) governing the course load of all student pastors-in-charge.

(d) Modifications of these regulations, in the case of individual student pastors, will be scrupulously administered in terms of location of charge and commuting distance, magnitude of assignment, and residence during the academic week. Demonstrated academic achievement will regularly condition any modification of the normal limitation. Since adequate indication of the student's academic proficiency will not be available before the completion of the first academic year, no modification of regulation 4(a) for junior students is allowed.

5. Student Assistant Pastors (not pastors-in-charge) may enroll for a full academic load providing: they are not on probation, are under the supervision of the Associate Director of Field Education, and possess field duties involving no more than 15 hours per week.

6. A student in candidacy for the Master of Divinity or Master of Religious Education degree shall enroll for no less than seven (7) semester hours in any semester. Variations from this regulation shall be by approval of the Dean on recommendation of the Dean of Students.

7. Not over 26 semester hours of Summer School work may be credited toward the degree of Master of Divinity for students in Program I, and not over 24 semester hours for students in Programs II and III. Students are strongly encouraged to pursue their studies in regular term.

8. Study abroad, with transferable credit toward graduation, may be

allowed to a candidate for the Master of Divinity degree by approval of the Dean on recommendation of the Dean of Students. Permission will not be granted in the absence of a strong academic record. Ordinarily, permission for such study may be granted to students who have completed the work of the Middler year. Both the institution abroad and a specific course of study proposed must have the prior approval of the Registrar, the Chairman of the Registration Committee, and the Dean.

9. Transfer of credit to the Divinity School of Duke University, leading to candidacy for the degree of Master of Divinity, ordinarily may not exceed in amount more than one-half of the academic credits (in proportional evaluation) required for fulfillment of degree candidacy (see "Admission," page 36).

10. Special Student status may be granted on recommendation of the Director of Admissions and the Registrar by approval of the Dean. Particular circumstances must prevail in the case of such admissions and will not be honored to permit circumvention of requirements of regular academic programs. Special students are not eligible for tuition or other scholarship grants.

11. Entering students matriculating at the beginning of the Spring semester will, with the approval of their faculty adviser, substitute for the *Junior Seminar* of the previous semester an elective cognate course at a convenient point in their program.

12. Auditing of courses is permitted on notice to the Registrar and by permission of the Dean and the faculty instructor concerned. Auditors, not in regular course of study as candidates for degrees, are subject to a $25.00 fee by University regulations.

13. Students in candidacy for a degree who secure minor employment outside the channels of the Field Education Office are required to inform the Associate Director of Field Education. Students carrying an outside employment work load of more than 15 hours weekly may be required to limit their academic load.

14. Students in candidacy for the Master of Divinity degree are required to sit for both the O.T. and N.T. English Bible examinations not later than their Middler year. It is requested that Master of Religious Education candidates sit for the examinations during their first academic year.

Curricular Provisions and Procedures

Admission to candidacy for the Master of Divinity degree is admission to the Regular Program I. Admission to candidacy under Programs II and III is through application to the Faculty Committee on Honors and Independent Studies through the office of the Registrar (See Admission Procedures, p. 11). Students in all programs are assigned to a faculty adviser for guidance and approval of their course of study.

Area Concentration

Area Concentration is applicable to Program I. It may be formulated in consultation with the student's faculty adviser as soon as feasible; it must be formulated no later than the Spring semester of the Middler year. Modifications of the program may be desirable in course but will be difficult after registration for the first semester of the Senior year. Area Concentration includes nine (9) semester hours of advanced study in either a division or subdivision of the stated *Courses of Instruction* and, in addition, a reading course or seminar preparatory to the Area Examination, creditable for three (3) semester hours on passing the Area Examination. A faculty committee will arrange and supervise divisional preparatory area studies and prepare the Area Examination to be taken in the final semester of the Senior year.

Vocational Emphasis and Professional Aims

The curriculum of the Divinity School serves graduate-professional aims with maximum flexibility. This lays heavy responsibility upon the student to see that he avails himself of those disciplines in both formal and ministerial studies that serve his vocational and professional ends. In planning his course of study, therefore, he must in consultation with his adviser, shape his program through reliable understanding of his eventual professional service. The following types of ministry represented in the former Divinity School curriculum may serve to indicate the variety of contemporary ministries: Parish Ministry, Ministry of Christian Education, Ministry of Missions, Pastoral Care, Teaching, Campus and Urban Ministries, Chaplaincy–Armed Forces or institutional. Attention to the course requirements listed for "Vocational Groups" under the former curriculum is recommended as a useful guide both for students and faculty advisers.

Ordination and Disciplinary Requirements

Students preparing for ordination are strongly advised to fulfill denominational requirements for study of church polity. Methodist students must attend to regulations of the *Discipline*, paragraph 344. Courses in Methodist church history and polity do not satisfy limited elective requirements. Introduction to Christian Theology (C.T. 32) has been certified for the Disciplinary requirement in Methodist doctrine.

Administration of Advanced Standing

The rationale of Advanced Standing is provided in the section entitled "Admissions" (See page 37). The provision is in principle applicable exclusively to core courses under the new curriculum. However, students

infrequently qualify for advanced standing in Early and Medieval Church History, and the principle is not applicable to the introductory course in Christian Theology (C.T. 32). Students qualifying for advanced standing in Types of Religious Philosophy (C.T. 20) by virtue of strong undergraduate background in philosophy and religion, are assigned to Contemporary Western Culture (C.C. 16). Students offered advanced standing prior to matriculation may with consultation and approval of their faculty adviser decline such standing.

A convenient summary of advanced standing options is as follows:

For Old Testament 11: O.T. 12; 101; 106 A, B, C, D; 196; 210-202.
For New Testament 18: N.T. 103-104; 105; 107; 109; 116 A, B, C; 117 A, B; 118; 119.
For Types of Religious Philosophy: C.C. 16.
For Church History 13: C.H. 137; 138; 331; 332.
For Church History 14: C.H. 85; 250; 330.

Language Study

Students who receive credit for six hours of New Testament Greek thereby fulfill the N.T. limited elective requirement in exegesis or interpretation. A similar provision is made for six hours of credit in Hebrew, which fulfills the O.T. limited elective requirement in exegesis or interpretation.

Students entering the Divinity School with undergraduate preparation in Greek may find it advantageous to select their New Testament limited elective in second year New Testament Greek or from among courses using Greek.

Student pastors or others carrying less than a full academic load and who desire to begin the study of Greek in the junior year may postpone the core course in Old or New Testament.

Graduation Credits

It is the responsibility of each student to see that he meets all requirements for graduation, and to take his courses in proper sequence. He is also responsible for seeing that any special permission granted him to deviate from the normal program is properly recorded in his personal files. Deviations from a normal academic program must be approved by the Dean on recommendation of the Dean of Students.

Grading System

The grading system of the Divinity School employs the letters A, B, C, D, and F, which have been defined as follows: A, Excellent; B, Superior; C, Average; D, Inferior; F, Failure; WP, Withdrew Passing; WF, Withdrew Failing; WI, Withdrew Illness; W, Withdrew, discretion of the

Dean; I, Incomplete; P, Passed; N.C., Non-credit. (See section on Incompletes.) No percentage equivalents are stated. A student is expected to maintain an average of "C."

In all courses where the instructor considers attendance a necessary part of the work of the course, a student may not receive a grade of over "C" if his absences total 12 per cent of the regular class periods, and if the absences total 24 per cent of the class periods he may not receive credit for the course.

Incompletes

A student may, with the permission of the instructor concerned, petition the Dean of Students to receive a grade of "incomplete" in a course. Such permission may be granted when a student, through some circumstance beyond his control, such as illness, has been hindered from meeting the course requirements. No "incomplete" is recorded without permission in writing from the Dean of Students. Ordinarily, an "incomplete" will not be approved in the case of students completing their academic work in the fall semester. An "Incomplete" automatically becomes an "F" unless it is removed through completion of assigned work by the following dates:

for "Incompletes" incurred in fall semester courses, March 15, following;
for "Incompletes" incurred in spring semester courses, October 15, following; and
for "Incompletes" incurred in summer courses, October 15, following.

Change of Course or Withdrawal

A student is permitted to change his registration for course work without incurring a penalty no later than completion of the second meeting of the course from which he desires to withdraw or, correspondingly, of the course to which he seeks admission.

No student shall be permitted to drop a course after the expiration of one-third of the period of instruction of the course without incurring failure, except for causes adjudged by the Dean of Students to be beyond the student's control. Conditions of emergency and not considerations of convenience shall be regarded as determinative in considering requests.

Graduation with Distinction

Students who achieve a grade point average of 3.75 (A, 4; B, 3; C, 2; and D, 1) for over-all academic record in the Divinity School are granted the degree of Master of Divinity, *summa cum laude*. Students with a grade point average of 3.5 are awarded the degree, *magna cum laude*. Such distinction is specified on their diplomas.

The Master of Religious Education Degree

The course of study leading to this degree is designed for persons desiring to prepare for leadership and service in the educational ministry of the church.

Admission

Applications for admission to the Master of Religious Education program are evaluated by the same standards as those applicable to the Master of Divinity degree and admission requirements and procedures are also the same. Attention is directed to the policy statements in this official *Divinity School Bulletin* published annually. Students planning to specialize in Christian Education should study carefully the section of the *Bulletin* which lists the most appropriate prerequisite studies for theological education. It is suggested that significant preparation in the areas of psychology, education, and sociology should be included in the choice of undergraduate studies. Studies in Religion are also recommended, especially for persons wishing to qualify for admission to advanced courses in the Divinity School curriculum.

General Requirements

Fifty-two semester hours of graduate-professional work, including a senior thesis or major project, must be completed for graduation. A student whose course load averages 13 semester hours each semester will qualify for graduation at the end of two academic years. The amount of work allowed in each semester may not exceed that permitted in the Master of Divinity curriculum.

In approving a plan of study leading to the degree, consideration will be given to undergraduate course work in Biblical studies and Christian Education provided such courses were taken in the junior and senior years in an accredited four-year college. A candidate having an academic average of "B" or better in undergraduate studies may be permitted to "read out" in a maximum of two courses (6 s.h.), usually scheduled one in each year, provided application for this privilege is approved by the Director of the M.R.E. program and the instructor(s) involved. A student not approved for "reading out" in the first year may qualify for this privilege in one course (3 s.h.) in the second year on the basis of a "B" or better average in the first year.

Candidates must pass the English Bible examinations as required in the Master of Divinity program.

A senior thesis or major project is required in the second year, with three semester hours being allowed for the necessary supervised research. Approval for the proposed thesis or project by the Director of the M.R.E.

program and the instructor(s) involved must be given no later than the end of the first year.

Course Requirements for the M.R.E. Degree

Curriculum Division		*Required Semester Hours*
Biblical Studies		6 to 9
Historical Studies		6 to 9
Theological Studies		6 to 9
Ministerial Studies		18
Church at Worship	3	
Pastoral Psychology	3	
Christian Education	12	
(including 3 s.h. for thesis or project)		
Total		36 to 45
Electives		16 to 7
Grand Total		52 52

The Master of Theology Degree

The course of study leading to the degree of Mastor of Theology is designed for graduates of accredited theological schools who desire to continue or resume their theological education for enhancement of professional competence in selected areas of study. Enrollment in the Th.M. degree program is open to a limited number of students who have received the B.D. (or the equivalent) with superior academic records.

Admission inquiries may be addressed to the Registrar for referral to the Director of the Th.M. program.

General Requirements

The general requirements for the degree of Master of Theology are:

1. Twenty-four semester hours of advanced studies, with an average grade of "B" (3.00 average on a 4.00 scale).
2. Superior performance in a comprehensive examination covering the major area of study. As an alternative to the Comprehensive Examination the student may elect to do a research project in his major area. This project shall carry 3 s.h. credit.
3. Residence for one academic year.

There are no general language requirements, but classical or modern languages may be required for certain programs (for example, Hebrew or Greek in Biblical studies).

The Program of Study

At least twelve of the required twenty-four hours must be taken in one of the basic divisions of study (Biblical, Historical, Theological, or Professional) which shall be designated as the candidate's major, and at least six hours in another of the divisions which shall be designated as the candidate's minor. No more than twelve hours may be taken in the summer sessions. No more than six semester hours of work completed in another accredited institution may be transferred and credited toward the degree. Ordinarily, no more than six hours may be taken through directed reading, and no more than three in any one semester or summer term. In the area of Pastoral Psychology, up to twelve hours may be taken through clinical training.

The comprehensive examination will be given at the close of the course of study for the degree, ordinarily in May or September.

The entire program of studies and comprehensive examination should be completed within twelve months. In exceptional cases, the time limit may be extended, but in no case beyond three years.

The candidate majoring in Pastoral Psychology chooses between a program which emphasizes Clinical Pastoral Education in the institutional setting and one which emphasizes Pastoral Care and Counseling under supervision in the parish setting. In either case, Course PP 277A (or its equivalent) is considered a prerequisite for a major in Pastoral Psychology. (The four semester hours credit are not applicable toward the twenty-four hours required for the degree, although the course will be indicated on the student's transcript). Accordingly, the student majoring in this area should ordinarily make provision for a program extending for a full calendar year, beginning the first full week in June.

Financial Aid

Candidates for the Th.M. degree are eligible for financial aid on the same basis as all regularly enrolled Divinity School students.

Please note in the pertinent sections of the chapter on "Financial Information" that the charges for tuition and general fee for the Th.M. degree are combined and are made on the basis of the number of semester hours taken, and that in order to be eligible for medical and surgical care a student must be taking at least seven hours.

Programs of Continuing Education

Divinity School Seminars

The Divinity School, with the support of the James A. Gray Fund, conducts each year a series of extension seminars consisting of two-day courses for Divinity School alumni and other ministers. In the fall semester of 1967 four seminars were held as follows: Richmond, Virginia, in Ginter Park Methodist Church and Columbia, South Carolina, in Shandon Methodist Church (November 27-28, 1967); Hickory, North Carolina, in First Methodist Church and Kinston, North Carolina, in Queen Street Methodist Church (November 30-December 1, 1967). The subject presented in all four seminars was "The Gospel and Ethics."

Lecturers in the Richmond and Kinston seminars were Dr. Kenneth W. Clark, Professor Emeritus of New Testament, Duke Divinity School; Dr. Paul Hessert, Professor of Theology, Garrett Theological Seminary; and The Reverend S. Collins Kilburn, Minister, The United Church, Raleigh.

Lecturers in the Columbia and Hickory seminars were Dr. D. Moody Smith, Jr., Associate Professor of New Testament, Duke Divinity School; Dr. Theodore Runyon, Professor of Systematic Theology, Candler School of Theology; and Dr. Joseph L. Allen, Associate Professor of Ethics, Perkins School of Theology.

The Duke Divinity School Seminars were directed by Dr. McMurry S. Richey, Professor of Theology and Christian Nurture, who presided for the Columbia and Kinston Seminars, while Dean Robert E. Cushman presided for the Richmond and Hickory Seminars.

The Henry Harrison Jordan Loan Library

Henry Harrison Jordan, distinguished member of the Western North Carolina Conference (1862-1931) was memorialized by his children in the establishment of an endowment in 1947. The Divinity School librarian is the custodian of books purchased under this fund for loan, through postal services, to qualified ministers of all denominations or localities. The Jordan Loan Library undertakes to maintain a catalogue of up-to-date publications representative of the several theological disciplines and areas of the minister's professional interest. Books are loaned on application to the librarian of the Divinity School from a printed catalogue supplied on request.

Divinity School Summer Clinics

Six clinics, running concurrently, for ministers of all denominations will be conducted at The Duke Divinity School, July 29-August 9. These are designed to supplement Seminary education through two weeks of intensive training in one selected subject. No academic credit is given. Participants are expected to attend the full two weeks from the opening dinner to the closing luncheon.

American Christianity. The group will consider distinctive problems and characteristics of contemporary Christianity in America. Lectures, discussions, laboratory trips. Special focus on correlation of religion and the arts. *Dr. Stuart C. Henry*

Campus Ministry. This clinic will deal with current trends in theological disciplines that relate to the nature of the university and the contemporary role and function of campus ministers and ministers of near-campus churches. *The Reverend Donald J. Welch and The Rev. Robert A. Davis*

Church Planning and Development. Leadership Development in the church of small membership will be the theme for consideration of the principles of recruitment and training leaders, giving particular attention to the areas of evangelism, stewardship, education, outreach and worship. Professionals in each field will be used as resource persons. *Dr. Daniel M. Schores, Jr.*

New Testament. An inquiry will be made into the question of whether

and how the New Testament message may be relevant to the present day world. Lectures, reading, and discussion. *Dr. D. Moody Smith, Jr.*

Pastoral Care. The personal and professional issues involved in the ministry of pastoral care will be explored through lectures, group discussions, and hospital visitation. *Dr. Richard A. Goodling and Dr. Donald S. Williamson*

Preaching. The clinic will focus on principal and practical aspects of sermon planning, preparation, and presentation, particularly in the area of sermon construction and delivery. Opportunity is provided for each participant to preach at least twice before a small group for critique. *Dr. John W. Carlton*

Cost. Registration Fee $10.00 Tuition $50.00
Room, double per week $8.75—Room, single per week $11.00
Linen, upon request, $3.75 per week.
Meals, Cafeteria

Sponsoring institutions make available funds for tuition. Other scholarships available upon request.

For full information: Write to The Director and Registrar, Dr. M. Wilson Nesbitt, Box 4814, Duke Station, Durham, North Carolina 27706.

The School for Supply Pastors

In cooperation with the Department of Ministerial Education of the Board of Education and the Southeastern Jurisdictional Conference of The Methodist Church, Professor O. Kelly Ingram directs for the Divinity School a School for Supply Pastors of The Methodist Church and others taking the Methodist Course of study for ministers in the summer of 1967. This school is in session for approximately four weeks each summer, and the required studies for one full year can be completed in this period. This is not a part of the regular work of the Divinity School and no credit toward a seminary degree can be earned. The faculty includes representatives from the Divinity School and other church-related institutions, plus selected leaders of nearby Annual Conferences. The twentieth session of the Supply Pastor's School is scheduled for July 8-August 2, 1968.

Consultation on The Task of Theology Today

On April 4-6, 1968, a significant consultation of theologians was held on the Duke campus to deal with "The Theology of Hope and the New Tasks of Theology Today." Professor Jürgen Moltmann, distinguished visiting professor of theology at Duke from the University of Tübingen

and author of "Theology of Hope" presented the position paper. Other participants included Professors Frederick Herzog and Roland Murphy from Duke; Professors John MacQuarrie and Roger Shinn from Union Theological Seminary in New York; Professor James Robinson, Claremont Graduate School; Professor Van A. Harvey, Southern Methodist University; Professor Harvey Cox, Harvard University; Professor Langdon Gilkey, University of Chicago; and Professor James M. Gustafson, Yale University Divinity School. Professor Emeritus H. Shelton Smith of Duke and Professor Paul L. Lehmann of Union Theological Seminary, New York, served as chairmen of the consultation.

Other Programs

Facilities for Advanced Study in the American Schools of Oriental Research

The Divinity School of Duke University is one of the supporting members of the American Schools of Oriental Research. Accordingly, students in the Divinity School have the privilege of attending the American School in Jerusalem or the one in Bagdad without charge for tuition. They may also compete for the financial aids which are offered annually by these Schools, which consist of four fellowships, the stipends depending upon available funds.

Programs in Pastoral Psychology

Programs in Pastoral Psychology beyond the studies incorporated in the M.Div. curriculum are provided in cooperation with the Duke University Medical Center. Five such special programs are available:

1. The Master of Theology degree with a major in Pastoral Psychology is ordinarily a calendar year program beginning the first full week in June. However, upon the recommendation of the staff, candidates with a quarter or more of clinical training may begin their program in September. Majors choose between a program which emphasizes Clinical Pastoral Education in the institutional setting and one which emphasizes Pastoral Care and Counseling under supervision in the parish setting. In either case, a quarter of clinical training (PP 277A or its equivalent) is considered a prerequisite. Candidates who emphasize CPE in the institutional setting receive two quarters of clinical training credit through the Association for Clinical Pastoral Education if their program extends over the calendar year.
2. A summer quarter of CPE is available beginning the first full week

in June for qualified M.Div. candidates. Certification is through the Association for Clinical Pastoral Education.

3. A summer quarter of Parish Clinical Education is available to students enrolled in The Divinity School serving in churches under the Rural Church Program under the Duke Endowment.
4. A one-year certificate or non-degree internship program in CPE is available through the Duke Medical Center for those who hold the M.Div. or equivalent degree. These trainees may enroll in The Divinity School as Special Students for a course or two each semester. Such training provides two quarters CPE credit through the Association for Clinical Pastoral Education.
5. A two-week clinic in Pastoral Care is provided each summer as part of The Divinity School's continuing education program for men with the M.Div or equivalent degree.

For further information concerning any of these programs, write to Dr. Richard A. Goodling, Director, Programs in Pastoral Psychology, The Divinity School. See Master of Theology degree program, p. 20.



Resources for Study

Library Resources

Divinity School Library

The Divinity School Library, containing a collection of more than 135,000 volumes in the field of religion and closely related disciplines, affords an unusual wealth of material for the seminary student. Although it is an integral part of the University's nine-unit library system which possesses approximately 1,900,000 books, the Divinity School Library has its own separate facilities in the Divinity School building. Its book collection is operated on the open stack system, and its reading room provides study facilities for students, housing space for the special reference collection in religion, and for the current numbers of the more than 500 religious periodicals to which the Library subscribes.

Staffed by a librarian and a reference librarian who are trained in theology as well as in library administration, and by a circulation staff of two persons aided by a number of student assistants, the Divinity School Library offers a variety of reference services to assist the student in selecting and locating materials. The staff, in cooperation with the faculty, maintains a book and periodical collection to support both basic courses and advanced research in all major fields of religious studies.

The Divinity School Library is adjacent to the Perkins Library and is internally connected with it by a corridor which gives easy access to its

many departments. The seminary student is permitted to withdraw books from the collection of more than 1,100,000 volumes in the Perkins Library, and to make use of its other resources and facilities which include manuscripts, archives, public documents, newspapers, periodicals, microfilm, maps, rare materials (among which are forty-one prized ancient Greek manuscripts), reference assistance, and provision for the borrowing of books not in the Duke Libraries from the Library of the University of North Carolina and other institutions.

Ormond Memorial Fund

Established in 1924 by Dr. J. M. Ormond, '02, and Mrs. Ormond, in memory of his mother and father, Mr. and Mrs. J. J. Ormond, the income from the Ormond Memorial Fund is to be used for the purchase of a collection of books on the rural church for the Library of the Divinity School at Duke University.

Avera Bible Fund

Established in 1895 by gift of Mrs. L. B. McCullers in memory of her husband, Willis H. Avera, the fund provides for the purchase of books to be used for the Divinity School Library.

Louis W. Bailey Memorial Fund

This memorial fund was established in 1958 by the Reverend A. Purnell Bailey in memory of his father. The income is to be used for books for the Divinity School Library.

The William Arthur Kale, Jr. Memorial Fund

William Arthur Kale, Jr. was a member of the Duke University class of 1958, a lover of sacred art and music, and a member of the University Chapel Choir. In his memory, there was established in 1964, by the provision of his parents, Professor and Mrs. William Arthur Kale, Sr., a fund for the purchase of books and other materials in the area of fine arts and religious musicology for the perpetual enrichment of the holdings of the Divinity School Library.

Corporate Worship

One of the most important aspects of a program of training for Christian service is warm and discriminating common prayer.

The center of corporate life of the Divinity School has been its own

place of worship, York Chapel. Due to current construction for renovation of library facilities, Divinity School worship is conducted in the great Chapel of the University. Regular chapel services are held, at which all students are expected to be present. Services are led by members of the faculty, by visiting ministers, and by members of the student body. Each spring, the Worship Committee invites a Duke alumnus to return to the Divinity School for a week to share, through Chapel sermons and seminar discussions, his experience of the challenges and possibilities of the parish ministry.

Public Lectures

The Committee on Lectures and Public Events presented or sponsored the following lecturers during the year 1967-68: The Very Reverend the Lord MacLeod of Fuinary, founder of the Iona Community in Scotland; The Reverend Professor Theodore Runyon, The Candler School of Theology, Emory University; Dr. R. J. Goldman, Principal, Didsbury College of Education, Manchester, England; The Reverend Professor James T. Cleland (Faculty Lecturer); Father Paul Verghese, Syrian Orthodox Bishop, India; and the Reverend Jürgen Moltmann from the University of Tübingen, Visiting Professor at Duke Divinity School during the year 1967-68.

Lectures and Symposia

The James A. Gray Lectureship

The James A. Gray Lectures were established in 1950 as part of the fund set up in 1947 by Mr. James A. Gray of Winston-Salem, North Carolina. This lectureship was once again delivered in connection with the Ministers' Convocation, held at the University in the fall of 1967. The lecturer was the Reverend Dr. James K. Mathews, Bishop of the Boston Area, The Methodist Church. His subject was "Methodism and Ecumenism."

The Divinity School Library Lectureship

In 1948 the Duke Divinity School Library Lectureship was established by the Reverend George B. Ehlhardt for the purpose of bringing to the Divinity School a succession of religious leaders. The lecturer for 1967-68 was The Reverend Dr. Franz Hildebrandt, Professor of Christian

Theology, Drew Theological Seminary. His subject was "Dietrich Bonhoeffer—The Man."

Symposium of Christian Missions

Each year, in collaboration with the Methodist Board of Missions, the Divinity School presents a team of distinguished participants in the world mission of the Church, usually including a secretary of missionary personnel and a Duke alumnus serving overseas. The general aims are "to inform students and faculty of the philosophy and work of missions as seen through the personal experience of speakers; to educate present and future ministers so that they will have a vital concern for the promotion of missionary education in the local church; and to evaluate the missionary enterprise as a significant force in the revolutionary world." The featured speaker in 1968 was The Reverend Doctor José Miguez Bonino, President of Union Theological Seminary in Buenos Aires, Argentina, who spoke on "The Impact of Vatican II on Protestant-Catholic Relations in Latin America."



Community Life

Divinity School Choir

A student organization of long standing is the Divinity School Choir. Membership in the Choir is open to all qualified students. The Choir sings regularly for the daily corporate worship and at special seasonal programs and services. New members are chosen by informal auditions held during the first week of fall classes. Auditions are arranged for all who are interested.

The Coordinating Council for Community Life

Beginning with the 1964-65 academic year, the Student Government Association was superseded by a Coordinating Council for Community Life. This Council is composed of representatives from the student body, faculty, administration, and Divinity Dames.

The purpose of the Council is, as the name implies, to coordinate the activities of the Divinity School community. Realizing that there are many shared interests and concerns within the community which cannot be expressed fully in a student body organization alone, the Council was created by a joint student-faculty committee and approved by participating groups.

The shared interests and activities of the community are expressed through the several committees of the Council. The Council has coordinating, reviewing, and initiating powers in matters affecting the common life.

Student members of the Council are elected by the three M.Div. classes, the M.R.E. candidates, and the Th.M. candidates. A student activity fee is collected at the beginning of each academic year to support the activities of the community. The fee, in recent years, has been six dollars ($6.00). The funds are administered through committees and are spent on such projects as missions, social action, social events, and student publications.

Other Organizations

Divinity Dames

The wives of Divinity School students have an organization through which there is opportunity for informal fellowship during the period of the students' residency. For the past several years lecture courses, running for two-week periods in the fall and spring semesters, have provided instruction in various aspects of parish life and in theological and Biblical subjects and issues. The Dean and faculty are concerned to assist the wife to understand her husband's vocation and to participate appropriately.

The Duke Endowment Student Association

The Duke Endowment Student Association is the organization of students who participate in the Summer Field Education Program.

At least six meetings per year are held for the purpose of fellowship and preparation for the summer field education responsibilities.

Publications

The Duke Divinity School Review

Three times each year (Autumn, Winter, and Spring) the Divinity School publishes a magazine designed to acquaint its readers with current theological thinking through the inclusion of public addresses given at the school, scholarly articles by faculty members and others, and book reviews. The *Review* is circulated free of charge to a mailing list of some 2,600, one-half of whom are alumni of the School and the other half

are interested friends, campus ministers, teachers, administrators, and librarians.

Directory and Response

In cooperation with the Dean's Office, students publish a faculty and student *Directory*. A monthly paper entitled *Response* is published under their editorship.



Admission

Requirements and Procedures for Admission

The Divinity School is a fully accredited member of the American Association of Theological Schools, and is one of twelve accredited seminaries of The Methodist Church. Candidates for admission must hold the degree of A.B., or its equivalent, based upon four years of work beyond secondary education in a college which is approved by one of the regional accrediting bodies, and their college records must be such as to indicate their ability to carry on graduate professional studies. They will be admitted without examination on presentation of an official, satisfactory transcript of college and all other academic credits which they may have secured. Recommendations from five responsible persons are required. Women will be admitted on the same basis as men.

Applications are evaluated with a view both to the academic achievement of the candidate and with reference to his personal and professional qualifications for the Christian ministry. While an academic average of less than "B minus" is ordinarily regarded as a disqualification for admission, nevertheless, the Committee on Admissions is impressed with a rising curve of achievement in the undergraduate program and makes its decision on the basis of the whole body of credentials of an applicant, including supporting letters of reference.

The applications of students from foreign countries will be considered, each on its own merits, the general principle being that training equivalent

to that of a baccalaureate degree from an accredited American college must have been secured.

In addition to an adequate academic preparation, applicants must satisfy the faculty as to their Christian character and purpose. A formal application blank may be secured from the office of the Divinity School. This must be filled out and returned by all candidates for admission. Applications received after May 1 cannot be assured of dormitory rooms for the ensuing academic year. *A minimum of thirty days is required to process any application, in many cases longer.*

No admission is final until approved by the Student Health Service, which requires a certificate of immunization and general health to be submitted not earlier than July 1 and not later than September 1.

Entering students are also required to take certain diversified tests administered by the Bureau of Testing and Guidance and by the Divinity School.

Persons who do not matriculate at the time for which they were originally admitted forfeit admission and must be formally readmitted. A student who withdraws from the Divinity School and desires to return at a later date must file with the Dean a written request for a leave of absence.

Applicants are expected on notification of admission to signify their acceptance within three weeks, and to pay an admission fee of $30.00. (Make check payable to Duke University and send to the Office of the Dean of the Divinity School.) This fee is applied to the regular first-term bill if the student matriculates; if he fails to do so, the fee is forfeited. This does not apply to the Summer Session.

Under the terms of the Selective Service Act, as it now stands, pre-enrollment for later formal admission may be granted to persons who meet the Divinity School standards and requirements for admission. Applications for pre-enrollment may be addressed to the Office of the Dean. Pre-enrolled students must send transcripts of each year's college work by June 15th of each year in which they are pre-enrolled. Pre-enrollment does not guarantee final admission, and a person who has been pre-enrolled for any length of time must send a transcript of work by February 1 of the year in which admission is sought. This must be accompanied by a letter from the college dean or other approved reference certifying to continued academic acceptability and good character and conduct.

Honors and Independent Studies Programs

Students desiring admission to the Honors and Independent Studies Program are referred to section on Admissions Procedures, p. 11.

Pre-Seminary Curriculum

The Divinity School of Duke University publishes as its own the official policy statement of the American Association of Theological Schools respecting undergraduate preparation for students expecting to enroll in graduate-professional theological studies.

"The student contemplating theological study should correspond at the very earliest opportunity with the school or schools to which he intends to apply and with the authorities of his church in order to learn what will best prepare him for the specific program he expects to enter. He will be likely to find under the guidance of the seminary that he should consider the following subjects:

English language and literature; history, including non-Western cultures as well as European and American; philosophy, particularly its history and its methods; natural sciences, both the physical and the life sciences; social sciences, where psychology, sociology, and anthropology are particularly appropriate; the fine arts and music, especially for their creative and symbolic values; Biblical and modern languages; religion, both in the Judaeo-Christian and in the Near and Far Eastern traditions.

Some seminaries require Greek or Hebrew for admission, and many advanced biblical courses are offered in the original tongues; modern languages have a less direct but immensely educative role and are required at the graduate studies level.

It is the understanding gained in these fields rather than the total of credits or semester-hours which is significant.

In many seminaries students who have been well prepared in religion and equipped with the tools of theological study will be set free, not to complete their theological course more quickly, but rather to pursue more advanced studies. The principle constantly to be kept in mind is not that of satisfying paper regulations and minimum requirements, but of making the most of opportunities for education."

Transfer of Credit

Under certain conditions transfer of credit from theological schools accredited by the American Association of Theological Schools is provided for by the Divinity School. Applications for transfer of credit will be ruled upon by the Committee on Admissions, and will be subject to evaluation in terms of the prevailing requirements of the Divinity School for graduation. *Ordinarily, credit from another institution will not be granted in amount exceeding one-half of the total credits required by the Divinity School for graduation.* A student applying for transfer of credit in excess of this amount may be required to pass such examinations as the Committee on Admissions may prescribe. In each case a letter of honorable dismissal from the school from which transfer is made is required along with transcript of academic credits.

Advanced Standing

Advanced standing allows entering students to begin work in any given field at a level higher than that of the core curriculum, or to substitute a specialized or cognate course for a core requirement.

Entering students with substantial undergraduate preparation in areas closely related to required courses of the Divinity School core curriculum may be eligible for advanced standing. While a student may be eligible for advanced standing in any subject, it is especially pertinent where students offer undergraduate majors of superior quality in Bible, religion, or philosophy. Students entering with six or more semester hours in the Greek language should consult the *Bulletin* under "Language Study" for a description of special privileges pertaining to their case. The fields in which entering students, by virtue of previous undergraduate study, are most likely to qualify for advanced standing are: Old Testament, New Testament, Types of Religious Philosophy, and Church History.

An entering student who offers not less than six semester hours of college credit, with a grade of "B" or better in one or more of these areas, may ordinarily anticipate advanced standing in corresponding required courses of the Divinity School core curriculum. All final transcripts will be studied, and advanced standing will be accorded to those who qualify under this provision.

A student who offers not less than three semester hours of college credit with a grade of "B" or better in one or more of these areas may, for satisfactory performance in a qualifying examination in the discipline, be granted advanced standing. Entering students who qualify under this provision must, at the time of application, make request for the privilege of sitting for such an examination.

Admission on Probation

Applicants for admission who are graduates of non-accredited colleges will be considered on their merits. Ordinarily, such applicants must show that they have attained a superior average for a four-year college course. Admission of such persons will, in every case, be on probation.

Applicants for admission who are graduates of accredited colleges but whose college transcripts do not fully meet Divinity School standards may be admitted on probation if their recommendations otherwise justify admission.

Probation means:

1. Students who during the first year of Divinity School work maintain less than a "C" average, including one or more failures, ordinarily will be required to withdraw from the School.
2. Students admitted on probation may carry only limited schedules of work, the amount to be determined by the Dean of Students.

3. A student admitted on probation ordinarily shall not be admitted for advanced standing.

Students whose work after admission is not satisfactory may be placed on probation.

Ministerial and Professional Qualifications

All students who are admitted to academic study in the Divinity School are subject to the established order of administrative regulations of the University and the accepted standards of personal conduct it enjoins; continuance in the School is conditioned upon acknowledgment of and compliance with such regulations and standards.

In particular, the University and the Divinity School expect and require students in candidacy for degrees, leading to a ministerial vocation, not only to exemplify the dignity of their calling, but to exhibit attitude and conduct conformable with the recognized standards of their Christian profession. While no honor system relating to academic integrity is formalized within the Divinity School, application for and admission to the courses of study assume the student's assent to full compliance with recognized standards of integrity in the fulfillment of academic tasks.

On this prior understanding, therefore, the University reserves the right, and matriculation by the student is a concession to this right, to compel the withdrawal of any student whose conduct at any time is not satisfactory to the University, even though no specific charge is made against the student.

As a graduate professional school of theology, the Divinity School expects, on the part of the student, an increasing manifestation of maturity and professional purposiveness in discharge of personal and academic responsibilities appropriate to the level of advanced academic work leading to the high and exacting demands of the Christian ministry. Since personal and professional qualifications for the ministry will be considered in evaluating the candidacy of all students for degrees, students whose persons, progress, or development indicate that they are not suited to the work of the ministry will not be allowed to continue in the School.

English Deficiency

Students whose English testing scores show marked deficiency or who are reported by their instructors as deficient in English usage will be required to take Remedial English in addition to meeting other requirements for the Master of Divinity degree.

Faculty Advisers

Each entering student is assigned to a faculty adviser at the time of registration and must report to his adviser. A student must consult with

his adviser in order to determine his course and cannot complete his registration without the signature of his adviser. It is understood that all students will continue to consult their advisers at the time of registration throughout the period of their academic work.



Financial Information

Fees and Expenses

Estimated Living Expenses

The total cost for a student to attend the Duke Divinity School varies according to individual tastes and requirements; however, experience indicates that a single student may expect to spend from $2200 up, with the average approximately $2400, and a married couple may expect to spend from $3700 up.

Master of Divinity and Master of Religious Education Candidates

The table below lists only basic minimum expenditures. In addition to the fees cited here, there is an admission fee of $30.00 which is applied to the first term bill and a room deposit of $25.00. (See the relevant sections in Admissions and Housing for full details.)

	Per Semester	*Per Year*
Tuition—M.Div. and M.R.E.	$312.50	$625.00
General Fee—M.Div. and M.R.E.	56.50	113.00
Approximate cost of meals	300.00	600.00
Room (double), Graduate Center	162.50	325.00

A student who is a candidate for either the M.Div. or M.R.E. degree shall be liable for the Tuition and General Fee for the number of semes-

ters required to complete the degree under the normal semester load. The M.Div. candidate will pay tuition for six (6) consecutive semesters and the M.R.E. candidate for four (4) consecutive semesters. If extra semesters are required to complete the degree, there will be no tuition for the extra semesters; however, the General Fee will be payable on a prorated basis.

The General Fee is in lieu of all special charges, and includes the following fees: matriculation, medical (provided student is taking at least seven hours), library, damage, commencement, and diploma.

Master of Theology Candidate

A student who is a candidate for the Th.M. degree will be liable for Tuition and General Fee, combined, on the basis of 24 semester hours (newly-adopted requirement replacing previous requirement of 30 hours), at the rate of $30.00 per semester hour. All other costs and regulations for the Th.M. degree are the same as those for the M.Div. and M.R.E. degrees.

Special Student

A Special Student is one who is enrolled for academic credit, but who is not a candidate for a degree. The Tuition and General Fee will be charged on a prorated basis. Other costs and regulations are the same as those for the M.Div. and M.R.E. candidates. No financial aid is available.

Audit Fee

Anyone seeking to audit a course in the Divinity School must, with the consent of the instructor concerned, secure permission from the Dean's office. In accordance with the general University practice, a fee of $25.00 per course will be required of all auditors who are not enrolled students.

Athletic Fee. Divinity School students may secure admission to all regularly scheduled University athletic contests held on the University grounds during the entire academic year by payment of the athletic fee of $15.00 per year, plus any Federal tax that may be imposed. This fee is payable in the fall semester.

Payment and Penalty

Both the Tuition and the General Fee are due and payable not later than the day of registration for that semester. In unusual circumstances, a student may secure permission of the Dean to delay registration, provided it is not beyond the first week of classes and the student pays the $5.00 late registration fee. No student is admitted to classes until arrangements are made with the Bursar of the University for the settlement of fees.

Students matriculating in either semester at a date later than that

prescribed in the catalogue shall pay to the Bursar of the University a penalty of $5.00. After the day of registration no refund of the General Fee or Tuition will be made except for involuntary withdrawal to enter the Armed Services.

Students who are reported by the Treasurer's Office as delinquent in their accounts will be debarred from credit in courses until cleared by the Treasurer's Office. Transcripts will not be issued for delinquent students.

Student Health

The payment of the General Fee entitles the student who is taking a minimum of seven hours to full medical and surgical care, with the exceptions noted below. This service is under the direction of the University Physician with the cooperation of the staff of Duke Hospital. It includes hospitalization, medical and surgical care, drugs, dressings, X-ray studies, and ward nursing. A charge for board is made at the same rate as in the University dining halls. Refraction of eyes, treatment of teeth, and of all chronic conditions, such as the removal of diseased tonsils, are not included in this service. The cost of any necessary braces and orthopedic appliances, as well as of special nursing, must be borne by the student.

Since the Student Health Program *does not cover students while away from the Duke Campus,* it is imperative that student pastors and assistant pastors (winter and/or summer) who are subjected to the hazards of highway travel with great frequency, secure complementary health and accident insurance for the full twelve month period. Students whose course load entitles them to full coverage under the Student Health Program are eligible to secure a complementary insurance policy, providing protection for the entire calendar year, through the University. Costs and details of the complementary policy are available from the Dean of Students. *Foreign students are required to hold this or another acceptable policy.*

Married students are required to carry insurance coverage for their dependents, providing for hospital, medical, and surgical care.

Living Accommodations

*Housing**

The Graduate Center is available to men and women enrolled in the Divinity School. This residence hall has separate living sections for both

*Information pertaining to residence halls and Duke University Apartments is subject to change prior to September, 1968.

men and women who jointly use the commons facilities and dining room. The rooms are equipped for two persons and the rental charge for a double room is $162.50 each semester per occupant. The rental charge for a single room is higher.

A graduate section in Hanes Annex near the Graduate Center is available for women students in the Divinity School who desire to reside in University residence halls. The rental charge is $177.50 per semester for each occupant. Town House Apartments are also available for graduate women students. These air-conditioned apartments are each equipped for three students. The rental rate for each occupant is $247.50 per semester. Details of housing for graduate women will be provided on request to the Office of Housing Management, Duke University, Duke Station, Durham, North Carolina.

Duke University Apartments, which consist of efficiency, one- and two-bedroom apartments, are available to married graduate students. The apartments are complete with basic furnishings and the current rental charges per month are $70.00 for the efficiency, $90.00 for the one-bedroom, and $110.00 for the two-bedroom. Heat, electricity, except for window fans and air conditioners, hot and cold water, garbage and trash collection, and maintenance of grounds are all included in the rental charge. For further information on married student apartments, write to the Office of Housing Management, Duke Station, Durham, North Carolina.

Reservations and Deposit Fee

Residence hall rooms, graduate women's apartments, and Duke University Apartments may be reserved by new applicants only if they have been accepted officially for admission to the Divinity School. Applications for rooms and apartments should be made to the Office of Housing Management, Duke Station, Durham, North Carolina. A $25.00 room deposit is required of each applicant before a residence hall room or women's apartment reservation is made. The initial room deposit is effective during the student's residence in the University residence halls or graduate women's apartment if attendance is continuous in regular academic years. The deposit will be refunded under the following conditions:

1. Within thirty days after the student has been graduated provided written notice is received at the Housing Office requesting refund.
2. Upon withdrawal from Duke University Residence Halls by students enrolled on the semester basis, provided written notice is received in the Housing Office by August 1st for cancellation of a reservation for the fall semester, and not later than January 15th for cancellation of a reservation for the spring semester.

3. When the reasons requiring withdrawal are beyond the student's control.

No refund of deposit will be made until the occupant has checked out of his room through the Office of Housing Management and has settled his account with the Bursar.

A resident student, in order to retain his room for the succeeding academic year, must make application at the Office of Housing Management for confirmation of the reservation.

The authorities of the University do not assume responsibility for persons selected as roommates. Each student is urged to select his roommate when the room is reserved. Any student who occupies a double room without a roommate will be given written notice from the Housing Office to obtain a roommate or he may be required to pay the rental consideration for the whole room. Apartment regulations are similar.

Any exchange of rooms must be made at the Housing Office. Persons exchanging rooms without the approval of the Housing Office will be subject to the charges for both rooms.

Rooms and apartments for graduate women are rented for the academic year but for no period of less than one semester without special arrangements. After the day of registration, no refund of room rent will be made except for involuntary withdrawal to enter the Armed Services. Such refunds will be made in accordance with the University's established schedule. Regulations governing the occupancy of rooms will be supplied by the Office of Housing Management to those students who make application for housing. Occupants are expected to abide by these regulations.

Dining Halls

Food service on both the Woman's College Campus and the West Campus is cafeteria style. The cost of meals approximates $300.00 per semester depending upon the needs and tastes of the individual. The dining facilities on the West Campus include two cafeterias with multiple choice menus and, in addition, the Oak Room, where full meals and *a la carte* items are served. The Graduate Center has a cafeteria which is open at meal hours and a coffee lounge which is open until 11:00 p.m. The prices are the same as in the West Campus Union.

Motor Vehicles

Each student possessing or maintaining a motor vehicle at Duke University shall register it annually at the begining of the fall semester. If a student acquires a motor vehicle and maintains it at Duke University

after academic registration, he must register it within five (5) calendar days after operation of vehicle on campus begins. Resident students are required to pay an annual parking fee of $30.00 for each automobile and $10.00 for each two-wheeled motor vehicle. The proper registration emblem must be displayed at all times.

At the time of registration of a motor vehicle, the following documents must be presented: (a) state vehicle registration certificate; (b) valid driver's license; (c) satisfactory evidence of automobile liability insurance coverage within limits of at least $10,000.00 per person and $20,000.00 per accident for personal injuries, and $5,000.00 for property damage, as required by North Carolina Motor Vehicle Law.

Students will receive a copy of the Parking, Traffic and Safety Regulations when they register.

Student Aid

A student should select his school on the basis of educational opportunity. At the same time financial consideration will be a legitimate and often pressing concern. Each student should formulate at least a tentative plan for financing his seminary education. While the exact method of financing the full theological degree cannot be assured at the beginning, he should have a clear understanding of his expenses and the sources of income for his first year and the assurance that there exist ways of financing the subsequent years.

The Committee on Scholarship and Financial Aid will counsel the student concerning financial needs and possible resources. A first principle of our financial aid program is that basic financial responsibility belongs to the student who is expected to rely upon his personal and family resources and his earning and borrowing power. Financial aid is provided to supplement student resources to the extent of demonstrated need.

In estimating student budgets, the Financial Aid Office adds to the fixed cost of educational expenses (tuition, fees, etc.) the average cost per student, providing for variations occasioned by the student's status (single, married, dependents, student pastor, indebtedness, etc.) at the time of admission. Students are allowed to exercise freedom and express their legitimate individuality in the use of their funds, but financial aid support is necessarily determined by what is considered "average" for students within the same category. To maintain a creative and at the same time a realistic program of financial aid, it is essential both to understand and to follow basic principles undergirding the program.

Resources are not sufficient to guarantee the complete underwriting of every student's seminary education. However, it is the goal of the

Financial Aid Office to assist each student in planning his financial program so that he will incur as little indebtedness as possible.

The Financial Aid Office constantly reviews available resources in order to assist the greatest number of students. It recommends assistance on the basis of demonstrated need and then within the limits of the conditions set forth governing each resource.

Financial assistance may consist of scholarships, loans, tuition grants, grants-in-aid, field education grants, and employment which may be worked out in various combinations on a year to year basis with reapplication and review each year.

Financial Resources

Personal

These may be savings and earnings, gifts from family and friends, and, if married, earnings of spouse and gifts from parents of spouse. In calculating anticipated income, the student first considers his own resources.

Church

Many local churches and conferences or other governing bodies provide gifts and grants for theological education, such as Ministerial Training Funds which provide grants and/or service loans to theological students. The student makes application to his own church, Annual Conference, Presbytery, or other governing body. The Financial Aid Office cooperates with these church agencies in making recommendations and in handling the funds.

The Divinity School

Scholarships

A limited number of scholarships are available to encourage qualified students to pursue their preparation for the Christian ministry. Such students ordinarily will not be eligible for remunerative employment during the academic year. When a student holding a scholarship is permitted to engage in remunerative employment, it is understood that adjustments may be made in the total Scholarship and Financial Aid Program for that student.

Junior Merit Scholarships. Junior Merit Scholarships are available to a limited number of students who have maintained an outstanding undergraduate record in scholarship and community life. Junior Merit Scholar-

ships consist of: grants of $775; tuition grants in varying amounts up to full tuition if demonstrated need warrants; and, if the student applies, preference in the selection of students for the Summer Endowment and Field Education Program.

National Methodist Scholarships. The General Board of Education of the Methodist Church makes available two $500 scholarships to rising middlers who have made outstanding records in the first-year class.

Middler Academic Scholarships. A limited number of scholarships of $700 each are made available to rising middlers on the basis of academic excellence and leadership potential.

Rowe Scholarships for Seniors. Each year a limited number of Merit scholarships in varying amounts are awarded to rising seniors who have achieved academic excellence and who give unusual promise of service in the pastoral ministry.

Foreign Student Scholarships. In cooperation with the Crusade Scholarship Committee of The Methodist Church and other authorized church agencies students are selected and are admitted to courses of study. Scholarships for such students are provided from the Lewis Clarence Kerner Scholarship Fund and from individual Churches and private philanthropy.

Th.M. Scholarships. A limited number of merit scholarships, based on academic achievement and financial need, are awarded each year.

M.R.E. Scholarships. A limited number of scholarships, based on need and academic achievement in undergraduate school, are available.

Tuition Grants

These, in varying amounts commensurate with need, are available upon application to the Committee on Scholarship and Financial Aid. Currently enrolled students who are eligible for consideration must apply in February prior to the academic year for which a tuition grant is requested. Entering students may apply when admitted.

Field Education Grants

Varying amounts are made available through the Divinity School to students who choose to make participation in the Endowment and Field Education Program an integral part of their seminary training. This Program includes the following:

1. Summer Assistants.
2. Winter Assistants.
3. Student Pastors. See full description under section on Field Education.

Loans

Loan funds held in trust by the University, as well as Methodist Student Loans and funds supplied by the Federal Government, through the National Defense Education Act of 1958, are available to qualified students. Submit application by July 1.

Note: Unless otherwise indicated all correspondence concerning financial aid should be directed to: Financial Aid Office, The Divinity School, Box 4814, Duke Station, Durham, N.C.

Employment

Students or wives desiring employment with the University should apply to the Director of Personnel, Duke University, Durham, North Carolina. Students or wives make their own arrangements for employment either in the City of Durham or on campus.

Financial Aid Resources

Certain special funds have been established, the income from which is used to provide financial aid through scholarships and Field Education Grants for students wishing to secure training in preparation for Christian ministry. The resources listed below include endowed funds and sources of annual contributions.

R. Ernest Atkinson Legacy

This legacy was established in 1952 under the will of the Reverend R. Ernest Atkinson of Richmond, Virginia, who was a member of the Trinity College Class of 1917.

Mary Reynolds Babcock Foundation Scholarships

Through the Mary Reynolds Babcock Foundation of Winston-Salem, North Carolina, a limited number of scholarships in an amount not exceeding $1,400 per year are granted to students in candidacy for the B.D. degree, on nomination and decision of the Dean and Committee on Scholarships and Financial Aid.

E. M. Cole Fund

This fund was established in 1920 by Mr. Eugene M. Cole, a Methodist layman of Charlotte, North Carolina.

Dickson Foundation Awards

The Dickson Foundation, Incorporated, of Mount Holly, North Carolina, has created a scholarship program for the purpose of providing assistance to Divinity students who demonstrate financial need and superior ability.

Preference is given to children of employees of American and Efird Mills, Incorporated, and its subsidiaries, to residents of Gaston, Caldwell, and Catawba Counties, and to North Carolinians.

The Duke Endowment

Among the beneficiaries of The Duke Endowment, established in 1924, are the rural Methodist churches of the two North Carolina Conferences. Under the Maintenance and Operation Program, Field Education Grants are available for Duke Divinity School students to participate as assistant pastors in rural Methodist churches under the Endowment and Field Education Program.

N. Edward Edgerton Fund

This fund was established in 1939 by Mr. N. Edward Edgerton of Raleigh, North Carolina, an alumnus of Duke University of the Class of 1921.

Thomas Jefferson Finch Scholarship

In 1955 Mr. George David Finch, '24, and Mr. Brown Faucette Finch, '54, established an annual scholarship in the amount of $650 a year in memory of Mr. Thomas Jefferson Finch, Trinity College Class of 1884, who was the father and grandfather of the donors.

The James A. Gray Fund

In 1947 Mr. James A. Gray of Winston-Salem, North Carolina, presented the fund, which bears his name, to the Divinity School for use in expanding and maintaining its educational services in behalf of North Carolina churches and pastors.

P. Huber Hanes Scholarship

Mr. P. Huber Hanes of Winston-Salem, North Carolina, an alumnus of Duke University of the Class of 1900, has established for Duke University an annual scholarship fund, a portion of which is used to provide financial assistance for Divinity School students.

The Franklin Simpson Hickman Memorial Fund

In the summer of 1966 Mrs. Veva Castell Hickman established a memorial fund in memory of her husband, The Reverend Professor Franklin Simpson Hickman, who served as Professor of the Psychology of Religion, 1927-1953; was Dean of the Chapel of Duke University, 1932-48; and the first Preacher to the University, 1938-53. The income of the Fund will give support to two enterprises: (1) a regular visiting lecturer in preaching, and (2) financial aid to students in the Master of Theology program who wish to specialize in the psychology of religion, or the psychological study of religious experience.

George M. Ivey Scholarship Fund

This fund was established in 1948 by gift of George M. Ivey, of Charlotte, North Carolina, an alumnus of Duke University of the Class of 1920.

Lewis Clarence Kerner Scholarship

This scholarship was established in 1959 by Beatrice Kerner Reavis, of Henderson, North Carolina, in memory of her brother, Lewis Clarence Kerner, and designated for the assistance of native or foreign-born students preparing for service in world Christian missions.

Laurinburg Christian Education Fund

This fund was established December 11, 1948, by gift through the Methodist College Advance Fund.

Myers Park Scholarship Fund

This fund was established in 1948 by members of the Myers Park Methodist Church, Charlotte, North Carolina.

W. R. Odell Scholarship

This fund was established in 1946 by the Forest Hills Methodist Church, Concord, North Carolina.

Jesse M. Ormond Scholarship Fund

In 1948 the North Carolina Conference established a fund in honor of Professor Jesse M. Ormond, who for many years was Director of Field Work and Professor of Practical Theology.

Gilbert T. Rowe Memorial Scholarship Fund

This scholarship fund was established in 1960 through the generosity of Divinity School Alumni and friends of the late Gilbert T. Rowe, Professor of Systematic Theology.

Elbert Russell Scholarship

This scholarship was established in 1942 by the Alumni Association of the Divinity School in honor of Elbert Russell, who served as Dean of the Divinity School and Professor of Biblical Theology.

Hersey E. Spence Scholarship

This scholarship was established in 1947 by the Steele Street Methodist Church of Sanford, North Carolina, in honor of Professor Hersey E. Spence, a former pastor of the congregation.

The Methodist Church

The Methodist Church makes a substantial contribution to the Divinity School by designating a certain percentage of its World Service offerings to the Divinity School.

The North Carolina and the Western North Carolina Conferences direct a certain percentage of their College Sustaining Funds to the Divinity School. The South Carolina Conference is a contributor to the Divinity School operational income.

The General Board of Education makes available annually two National Methodist Scholarships having a cash value of $500 each.

Local Methodist churches and individuals make contributions to the financial aid program of the Divinity School, thus making it possible to assign students under the Endowment and Field Education Program to urban and out of state churches.

Dempster Graduate Fellowships

The Methodist Board of Education offers each year the Dempster Graduate Fellowships for graduates of Methodist Theological Schools, who are engaged in programs of study leading to the degree of Doctor of Philosophy in Religion with a view to teaching in Methodist colleges and seminaries. Several Divinity School graduates have held these fellowships.

Foreign Scholarship Fund

Maintained through annual contributions of individuals and churches. Contributions for 1966-67 included: St. Paul's Methodist Church, Goldsboro, North Carolina, Hayes Barton Methodist, Raleigh, North Carolina.

Field Education

Its Nature and Purpose. Field Education is conceived to have a two-fold nature. (1) It is a vital part of the total education of the theological student, testing his motivation and fitness for the vocation of the ministry. (2) It is a symbol of a mutual relationship between the seminary and the local church, and it is an effective way of declaring and implementing the purpose of the seminary to serve the church as well as the student.

More specifically it is the purpose of Field Education to: (1) assist the student in understanding the nature and task of the local church; (2) study some of the practical problems involved in the care of the parish; (3) afford an opportunity for the progressive development of the student's knowledge and ministerial skills through responsible participation in the life of the church; (4) contribute leadership to the churches of the region; and (5) provide, in most instances, Field Education Grants to assist the student in defraying educational expenses.

Opportunities for participation in the Field Education program are made available through the cooperative efforts of The Divinity School, churches, pastors, and district superintendents, or equivalent officials of other denominations. The student must make application for the particular program in which he wishes to participate.

Types of Field Education. (1) Summer Assistant Pastors: Upon request of a church, a student is assigned by the Committee on Endowment and Field Education to serve ten weeks as an assistant. The student is provided board, room, laundry, necessary travel, and a Field Education Grant of $1,000.00. To participate, the student must complete the preparatory training sessions under The Duke Endowment Student Association. A majority of the students are assigned to Methodist rural

charges in the State of North Carolina. A limited number of entering students can be assigned; however, prior consideration is given to rising Middler and Senior students. Students transferring to another seminary are not eligible for assignment the summer prior to transfer.

(2) Winter Assistant Pastors: In consultation with the pastor, church leaders, district superintendents and/or other responsible leaders, students are assigned to serve as assistants during the academic year. The time element will vary from six to sixteen hours per week and the Field Education Grants will vary accordingly up to a maximum of $1,000.00. If more than 16 hours of service per week are required the student will be required to reduce his academic load.

(3) Student Pastors: A student may be appointed by an annual conference or other official agency of a recognized denomination to serve as a student pastor. The student must have the approval of the Director of Field Education, as agent of the Dean, before accepting an appointment as a student pastor. All *new* student pastors must participate in an orientation and training program. All student pastors enroll for not less than seven nor more than ten hours per semester, thus requiring four academic years to complete the M.Div. degree. If the charge being served is located beyond 50 to 55 miles from the campus, the student is required to live in Durham or vicinity during the academic week, Monday 12:00 noon through Friday 4:00 p.m. Salaries and other forms of support are arranged by church officials in keeping with denominational policies and are reported to The Divinity School.

(4) Internships: An expanding program of nine to twelve month internships is currently available at the Divinity School. Academic credit may be given upon the satisfactory completion of a relevant academic study program and periodic reports to the assigned faculty adviser are required. Students who have completed at least two full years of their seminary curriculum are eligible to apply.

(5) Other Church-Related Positions: These consist of teaching church school classes and counseling youth groups, and are expected to require no more than three to six hours per week. These positions may or may not involve Field Education Grants.

Supervision. Through the coordinated efforts of The Divinity School, local churches, district superintendents, and pastors there is continuous supervision of all students participating in the Endowment and Field Education Program. Under the general direction of the Director of Field Education, members of the faculty share in administering this program.

Supervision is carried on through: (1) training sessions required of all students participating in the program; (2) regular visits by faculty members to charges served by student pastors and assistant pastors, followed by student-faculty conferences; (3) seminars for local supervisors; (4) regular reports from all students and charges to the Endowment and Field Education Office.

Courses of Instruction*

Required courses are numbered from 9 to 70. Elective courses carrying credit in the Divinity School only are numbered from 71 to 199. Courses approved for credit in both the Divinity School and the Graduate School of Arts and Sciences are numbered above 200. Lists of courses to be offered in any semester will be available at the time of each registration. For a description of each course, consult the *Bulletin of The Divinity School.*

Junior Seminars, Colloquia, and English Bible

9. *Faith, Church, and World.* 2 s.h. Staff
10. *Church and Ministry Today.* 2 s.h. Staff
Junior Colloquia, I and II. 1 s.h. each semester. Staff

The English Bible Examinations are retained as graduation requirements in the new curriculum. *English Bible I* (*Old Testament*) and *English Bible II* (*New Testament*) will be offered as non-credit courses to aid the student in preparation for the English Bible Examinations. These requirements apply to both the M.Div. and M.R.E. degrees. Staff

*On approval of the Dean, courses offered in the Graduate School of Arts and Sciences other than those approved for credit in the Divinity School may be approved for credit in individual cases, provided no equivalent course is offered in the Divinity School; each case to be decided on its merits.

I. Biblical Studies

Old Testament

11. *Introduction to the Old Testament.* 3 s.h. Tucker

12. *Introduction to the Old Testament.* 3 s.h. Efird or Stinespring

101. *Post-Exilic Prophecy.* 2 s.h. Stinespring

106. *Exegesis of the English Old Testament.* Prerequisite: O.T. 11 or the equivalent. 3 s.h. Staff

196. *The Bible and Recent Discoveries.* 2 s.h. Stinespring

201-202. *First Hebrew.* One year of Greek prerequisite. 6 s.h. Stinespring

207. *Second Hebrew.* First semester. 3 s.h. Staff

208. *Second Hebrew.* Second semester. 3 s.h. Staff

209. *Old Testament Theology.* Prerequisite O.T. 11-12 or equivalent. 3 s.h. Tucker

302. *Studies in the Intertestamental Literature.* Prerequisite: permission of the instructor. 3 s.h.

304. *Aramaic.* 3 s.h. Stinespring

305. *Third Hebrew.* 3 s.h. Stinespring

306. *Language and Literature of the Dead Sea Scrolls.* Prerequisite: a knowledge of Hebrew. 3 s.h. Wintermute

307. *Syriac.* Some knowledge of Hebrew and Aramaic prerequisite. 3 s.h. Stinespring

309. *History of the Ancient Near East.* 3 s.h. Tucker

310. *Old Testament Prophecy.* Prerequisites: O.T. 11 or equivalent. 3 s.h. Stinespring or Tucker

350-351. *Seminar in Old Testament.* 3 s.h. Staff

**History of Art 215. Religious Art of the Ancient Near East.* 3 s.h. Markman

**History of Art 216. Religious Art of the Classical World.* 3 s.h. Markman

New Testament

18. *Early Christian Life and Literature.* 3 s.h. Efird

19. *Introduction to New Testament Theology.* Prerequisite: N.T. 18. 3 s.h. M. Smith

103-104. *Hellenistic Greek.* 6 s.h. (Two sections) Staff

105. *Studies in Paul.* 3 s.h. Efird

107. *The Church in the New Testament.* Prerequisite: N.T. 18. or equivalent. 3 s.h. M. Smith

116. *Exegesis of the English New Testament I.* 3 s.h. Staff

*Course offered in the Graduate School of Arts and Sciences which is credited toward the degree of Master of Divinity.

117. *Exegesis of the English New Testament II.* 3 s.h. Staff
118. *The New Testament in Greek.* 3 s.h. Staff
119. *The New Testament in Greek.* 3 s.h. Staff
225. *Living Issues in New Testament Theology.* Prerequisite: N.T. 19. 3 s.h.
226. *Exegesis of the Greek New Testament I.* Prerequisite: N.T. 103-104. 3 s.h. M. Smith or Young
227. *Exegesis of the Greek New Testament II.* Prerequisite: N.T. 103-104. 3 s.h. M. Smith or Young
258. *Coptic.* Prerequisite: at least one year of Greek. 3 s.h. Wintermute
312. *Pauline Theology.* 3 s.h. Davies
314. *Judaism and Christianity in the New Testament.* 3 s.h. Davies
319. *The Gospel According to St. Matthew in Recent Research.* 3 s.h. Davies
340-341. *Seminar in the New Testament.* 3 s.h. M. Smith
345. *The Epistle to the Hebrews in Recent Research.* 3 s.h. Davies
**Greek 257.* 3 s.h.
**Latin 258.* 3 s.h.

II. Historical Studies

Church History

13. *History of the Church to the Protestant Reformation.* 3 s.h. Petry
14. *History of Modern European Christianity.* 3 s.h. Hillerbrand
85. *Seminar in Modern European Christianity.* Prerequisite: C.H. 13-14. 2 s.h. Hillerbrand
137. *Religious Leaders in Christian History.* Prerequisite: C.H. 13. 3 s.h. Petry
138. *Great Books in Christian History.* 3 s.h. Petry
139. *Methodism.* Prerequisite: C.H. 13. 2 s.h. Petry
140. *The Rise of Methodism and the Anglican Background.* For Seniors. 3 s.h. Baker or Rogers

(Students are advised that either C.H. 139 or C.H. 140 will satisfy the Methodist Discipline Requirement No. 344.)

142. *British Methodism after Wesley.* 3 s.h. Baker
250. *The Reformation of the 16th Century.* 3 s.h. Hillerbrand
251. *The Age of Counter-Reformation.* 3 s.h. Hillerbrand
252. *Pietism, Deism, Rationalism.* 3 s.h. Hillerbrand
253. *History of Modern Catholicism.* 3 s.h. Hillerbrand
330. *The Church in Europe Since 1800.* 3 s.h. Petry

*Course offered in the Graduate School of Arts and Sciences which is credited toward the degree of Master of Divinity.

331. *The Social Message of the Early and Medieval Church.* Prerequisite: C.H. 13. 3 s.h. Petry

332. *The Medieval Church.* Prerequisite: C.H. 13. 3 s.h. Petry

334. *Church Reformers and Christian Unity.* Prerequisite: C.H. 13. 3 s.h. Petry

336. *Christian Mysticism in the Middle Ages.* Prerequisite: C.H. 13. 3 s.h. Petry

Historical Theology

21. *The Theology of the Protestant Reformation.* 3 s.h. Grislis

111. *Literature of the Latin Church.* Prerequisite: Permission of instructor. 3 s.h.

120. *Faith and Heresy in the Early Church.* 3 s.h. Grislis

121. *Sacraments in the Christian Church.* 3 s.h. Grislis

123. *The Theology of the Early Church.* 3 s.h. Grislis

234. *The Theology of St. Thomas Aquinas.* 3 s.h. Grislis

240. *The Theology of Richard Hooker.* 3 s.h. Grislis

260. *Life and Thought of the Wesleys.* Permission of instructor. 3 s.h. Baker

261. *The Theology of John Wesley.* 2 s.h. Richey

308. *Greek Patristic Texts.* Prerequisite: reading knowledge of classical or N.T. Greek and C.H. 13. 3 s.h. Young

337. *The Theology of Martin Luther.* 2 s.h. Hillerbrand

338. *The Theology of John Calvin.* Prerequisite: H.T. 21. 3 s.h. Grislis

362. *The Theology of St. Augustine.* 3 s.h. Grislis

American Christianity

28. *History of American Christianity.* 3 s.h. Henry

129. *The Theology of American Methodism.* 3 s.h. Rogers

199. *The American Social Gospel.* 3 s.h. Henry

296. *Religion on the American Frontier.* Prerequisite: A.C. 28. 3 s.h. Henry

372. *Theology of Paul Tillich.* 3 s.h. Robinson

385. *Religion in American Literature.* 3 s.h. Henry

395. *Christian Thought in Colonial America.* 3 s.h. Henry

396. *Liberal Traditions in American Theology.* 3 s.h. Henry

397. *Contemporary American Theology.* 3 s.h. Henry

World Christianity

24. *The Christian World Mission.* 3 s.h. Lacy

133. *History of Christian Missions.* 2 s.h. Lacy

135. *Area Studies of the Christian Church.* 2 s.h. Lacy and Others
156. *The Ecumenical Movement.* 3 s.h. Lacy
386. *Seminar: Christianity in Dialogue with Other Faiths.* 3 s.h. Lacy
See also: C.Ed. 126, Ch.E. 190, Ch.E. 292, and Ch.E. 333.

History of Religions

158. *Contemporary Non-Christian Religions.* 3 s.h. Sullivan or Ricketts
180. *Religions of the Near East.* 3 s.h. Partin
182. *Religions of India.* 3 s.h. Sullivan
280. *The History of Religions.* 3 s.h. Sullivan

III. Theological Studies

Christian Theology

20. *Types of Religious Philosophy.* 3 s.h. Robinson
32. *Introduction to Christian Theology.* 3 s.h. Cushman and Herzog
102. *Christian Apologetics and Modern World Views.* 3 s.h. Robinson
108. *Major Trends in Contemporary Theology.* 3 s.h. Herzog
110. *This Life and the Age to Come.* 3 s.h. Robinson
*125. *Theological and Psychological Interpretations of Man.* 3 s.h. Richey
127. *Contemporary Understandings of Man.* 3 s.h. Richey
200. *The Person and Work of Christ.* Prerequisite: C.T. 32. 3 s.h. Cushman or Hall
213. *The Structure of Roman Catholic Thought.* Prerequisites: C.H. 13 and 14 or H.T. 21. 2 s.h. Herzog
216. *Kierkegaard Studies.* Prerequisite: C.T. 32 or permission of the instructor. 3 s.h. Robinson
224. *Conceptions of Man in Western Thought.* 3 s.h. Richey
300. *Systematic Theology.* Prerequisite: C.T. 32 or equivalent. 3 s.h. Herzog
303. *The New Hermeneutic and the Concept of History.* Prerequisite: C.T. 32. 3 s.h. Herzog
320. *Hegel and Schleiermacher.* 3 s.h. Herzog
322. *Nineteenth-Century European Theology.* 3 s.h. Herzog
325. *Philosophical Theology I.* Prerequisite: C.T. 32. 3 s.h. Robinson
326. *Philosophical Theology II.* Prerequisite: C.T. 325. 3 s.h. Robinson
328. *Twentieth-Century European Theology.* Prerequisite: C.T. 32 and permission of the instructor. 3 s.h. Herzog

*May be taken and grade recorded as Christian Educ. 125.

Christianity and Culture

16. *Contemporary Western Culture.* 3 s.h. Poteat
80. *The Christian Faith and Tragedy.* 3 s.h. Poteat
81. *Recent and Contemporary Art and Theology.* 3 s.h. Poteat
230. *The Meaning of Religious Language.* Prerequisite: C.T. 32 or permission of instructor. 3 s.h. Poteat
231. *Seminar in Christianity and Contemporary Thought.* Prerequisite: C.T. 32 or permission of instructor. 3 s.h. Poteat
380. *Existentialist Thought.* Prerequisite: C.T. 32 or permission of instructor. 3 s.h. Poteat
381. *Seminar: Phenomenology and Religion.* Permission of the instructor. 3 s.h. Poteat

Christian Ethics

27. *Christian Ethics.* 3 s.h. Beach and H. Smith
114. *Christian Social Ethics.* 3 s.h. Smith
115. *Christian Social Action in the Local Church.* 2 s.h. Smith
122. *Moral Theology in the Nineteenth Century.* 3 s.h. Smith
124. *Moral Theology in the Twentieth Century.* 3 s.h. Smith
175. *Special Problems in Christian Ethics.* 3 s.h. H. Smith and others
190. *The Christian Critique of Communism.* 3 s.h. Lacy
194. *The Protestant Church and American Culture.* 3 s.h. H. Smith
292. *Christian Ethics and International Relations.* 3 s.h. Lacy
333. *Seminar: Marxist Ideology and Christian Faith.* Prerequisite: Ch.E. 190 or equivalent. 3 s.h. Lacy
389. *Christian Ethics and Contemporary Culture.* Prerequisite: C.E. 27 or its equivalent. 3 s.h. Beach
390. *Current Problems in Christian Ethical Theory.* Prerequisite: Ch.E. 27 or its equivalent. 3 s.h. Beach
391. *Historical Types of Christian Ethics I.* Prerequisite: Ch.E. 27 or its equivalent. 3 s.h. Beach
392. *Historical Types of Christian Ethics II.* 3 s.h. Beach
394. *Christianity and the State.* Prerequisite: Ch.E. 27. 3 s.h. Beach

IV. Ministerial Studies

The Care of the Parish

146. *Church Building.* 2 s.h. Nesbitt
147. *Sociological Factors in American Religious Expression.* 3 s.h. Schores

148. *Christian Stewardship and Church Finance.* 2 s.h. Ingram
150. *Church and Community.* 2 s.h. Schores
151. *The Town and Country Church.* 2 s.h. Nesbitt
152. *Evangelism and the Local Church.* 2 s.h. Kale and Ingram
153. *Comparative Polity and Ecumenics.* 3 s.h. Ingram
154. *The Urban Church.* 2 s.h. Ingram and Schores
155. A, B, C, D. *Church Organization and Administration.*
A. *The Methodist Church.* 2 or 3 s.h. Ingram
B. *The Baptist Churches.* 2 or 3 s.h. Ingram and Others
C. *The United Church of Christ.* 2 or 3 s.h. Ingram and Others
D. *The Presbyterian Churches.* 2 or 3 s.h. Ingram and Others
157. *Research and Survey for the Parish Minister.* 2 s.h. Schores

Christian Education

22. *Faith and Nurture.* 3 s.h. Richey
25. *The Church and Christian Nurture.* 2 s.h. Kale
125. *Theological and Psychological Interpretations of Man.* (See C.T. 125)
126. *Missionary Education in the Local Church.* 2 s.h. Lacy and Others
149. *The Ministry to the Campus.* 3 s.h. Staff
161. *Teaching Methods.* Required for candidates for the M.R.E. degree. 3 s.h. Kale
162. *Curriculum Building in the Local Church.* 3 s.h. Kale
164. *Christian Education of Children.* 2 s.h. Kale
165. *Christian Education of Youth.* 2 s.h. Kale
166. *Christian Education of Adults.* 2 s.h. Kale
167. *Theology and the Laity.* 3 s.h. Richey
169. *Major Issues in Christian Education.* 3 s.h. Richey
M.R.E. Thesis or Project. 3 s.h. Kale and others

Pastoral Psychology

170. *Pastoral Conversation.* 3 s.h. Goodling
171. *Pastoral Counseling.* Prerequisite: P.P. 177. 3 s.h. Williamson
172. *Pastoral Care in Marriage and Family Life.* 2 s.h. Goodling
174. *Religion and Personality Processes.* Prerequisite: P.P. 177. 3 s.h. Goodling or Williamson
175. *Special Practicum Projects.* Goodling or Williamson
176. A, B. *Pastoral Care and Persons in Institutions.* 3 s.h. each. Staff
177. *Introduction to Clinical Pastoral Education.* Prerequisite: P.P. 170. 3 s.h. Staff
178. *The Psychodynamics of the Community Life of the Local Church* Admission by consent of the instructor. 2 s.h. Williamson

271. *Advanced Counseling: Marriage and Family.* (For Th.M. candidates.) 2 s.h. Williamson

274. *Research Problems in Pastoral Psychology.* 2 s.h. Goodling

275. *Individual Study in Pastoral Psychology.* 2 s.h. Staff

276 A, B, C. *Clinical Pastoral Education I.* 4 s.h. each

277 A, B, C. *Clinical Pastoral Education II.* 4 s.h. each

278. *Psychological Theories of Personality.* 2 s.h. Williamson

279. *The Caring Ministry of the Laity Through Personal Groups.* 2 s.h. Williamson

281 A, B. *Pastoral Counseling Practicum.* Admission by permission of instructor. 4 s.h. Goodling and Williamson

The Church at Worship

34. *Workshop in Communication.* 1 s.h. Rudin

Preaching

30. *Theory and Practice of Preaching.* 3 s.h. Hall

181. *Advanced Sermon Analysis Seminar.* 3 s.h. Hall

185. *Preaching Values in Non-Biblical Sources.* 3 s.h. Hall and Staff

187. *Pre-Reformation Preaching.* Prerequisite: C.H. 13. 2 s.h. Petry

193. *Theology and Preaching.* 3 s.h. Hall

Worship and Church Music

134. *Liturgical Reading.* 2 s.h. Rudin

141. *The Classic Age of the English Hymn.* 2 s.h. Baker

178. *Corporate Worship.* 3 s.h. Rudin

180. *Church Music.* 3 s.h. Hanks

Chapel Choir. Students who successfully complete C.W. 180 before graduation may qualify for credit (to the limit of 2 s.h.) of ½ s.h. for each semester of effective participation in the Chapel Choir. Hanks

Field Education, Clinical Training, and Internships

Field Education

Each project involves the quality of preparation and participation commensurate with one semester hour of academic credit. Participation in any project must have the approval of the supervising professor and the Field Education Office before work is begun. Registration for projects must be at the time of normal Divinity School registration, though work on the project may extend over varying lengths of time. A student may receive credit for a maximum of three projects during his seminary career.

Projects in other areas may be proposed by professors or students for consideration by the Field Education and Curriculum Committees.

195. A, B, C, D, E, F. *Field Education Projects.*

A. *Pastoral Psychology Practicum.* 1 s.h. Claytor and Staff

B. *Community Studies.* 1 s.h. Schores and Staff

C. *Leadership Training.* 1 s.h. Kale and Staff

D. *Christian Education Laboratory.* 1 s.h. Kale and Staff

E. *Research in Experimental Ministries.* 1 s.h. Ingram and Staff

F. *Community Center Practicum.* 1 s.h. H. Smith and Staff

Clinical Training in Pastoral Psychology

1. Clinical credit may be allowed to students for a quarter (10 or 12 weeks) of training in programs accredited by the Association for Clinical Pastoral Education (ACPE).

2. Credit for clinical training in programs not accredited by ACPE will be on an individual basis only upon the recommendation of the Director of Studies in Pastoral Care and approval of the Dean.

3. Students involved in clinical training under the direct supervision of members of the Pastoral Psychology staff shall register for credit under PP 277A for 4 semester hours of credit.

4. Students involved in clinical training in other programs shall register with the ACPE and upon receipt of a supervisor's report at the end of the training period will receive 4 s.h. of transfer credit.

5. Grades for clinical training are to be reported as either "P" or "F".

Interseminary Church and Society Internships

The Interseminary Church and Society Program is an experiment in the theological education of students, professors, and leaders in some of the major institutions of our time. Sponsored jointly by Duke Divinity School, Union Theological Seminary in Virginia, and Virginia Theological Seminary, the Program currently permits students to enroll for an academic year in residence at one of the participating schools and to undertake work and study in business and industry, government and politics, or science and technology. Major features of the program include specific job placement, professional and academic supervision, and regular seminars and colloquia. For further information concerning this Program, consult the Registrar.

Ch.E. 751. See *Christian Ethics*, Courses of Instruction, page 59.

Ch.E. 131-132. *Interseminary Intern Seminar.* 6 s.h. H. Smith and others

Campus Ministry Internships

143-144. *Campus Ministry Internship.* A nine- to twelve-month position in approved locations designed to provide professional experience, under qualified guidance, in ministering to college students. Academic seminars, a personal journal, directed readings, and evaluative reports will aid the intern in clarifying his vocational choice and professional identity as a campus minister. Open to students who have completed at least two full years of seminary and who seriously contemplate a ministry to the campus following graduation. Prerequisite: C.Ed. 149. 3 s.h. each semester. *Staff*



The School of Engineering



Table of Contents

The Profession of Engineering 1

General Information 2
- Engineering at Duke University 2
- History 3
- Organization 3
- Physical Plant 5

Programs of Study and Requirements for Degrees 6
- Undergraduate Degree Offered 6
- Department of Civil Engineering 9
- Department of Electrical Engineering 12
- Department of Mechanical Engineering 15
- Interdisciplinary Major 18
- Division of Biomedical Engineering 18
- Graduate Degrees Offered 20

Undergraduate Special and Cooperative Programs 23
- Reserve Officers Training Corps 23
- Advanced Placement Program 24
- Study Abroad 24
- Eligibility for Special Curricular Programs 25
- Reciprocal Agreement with the Consolidated University of North Carolina 26

Student Life 27
- Living Accommodations 27
- Services Available 28
- Organizations and Activities 29
- Engineering Awards and Prizes 31

Admission 33
- Undergraduate 33
- Graduate 35

Financial Information 37
- Undergraduate Fees and Expenses 37
- Graduate Fees and Expenses 40
- Undergraduate Financial Aid 41
- Graduate Financial Aid 43

University Registration and Regulations 45
- Undergraduate Registration 45
- Undergraduate Academic Regulations 46
- Eligibility for Undergraduate Academic Honors 51
- Graduate Registration 52
- Regulations Governing Graduate Degrees 54
- Graduate Academic Regulations 60
- Undergraduate Nonacademic Regulations 63

Courses of Instruction 65

The Profession of Engineering

Throughout history engineering has continually interacted with the rest of human society in a highly determinative way. Its influence is evident in the very fabric of our culture. Engineering has provided the means for feeding, clothing, and sheltering mankind. It has largely freed man from physical drudgery and from the slavery of routine mental effort. It has provided the tools of new scientific discovery, as well as those of new art forms. It has provided the means of bringing to mankind everywhere the results of the creative efforts of the great artists, writers, scientists, and philosophers of both ancient and modern times. It has placed man in close contact with his fellowmen throughout the world, and is now concerned with placing man on the moon. The engineer achieves imaginative new solutions to many of the very real problems that confront mankind.

No simple formal definition suffices to portray the multifaceted activity which is engineering. A partial picture is afforded by the statement that "engineering is the profession in which knowledge of mathematics and the physical sciences is applied to develop ways of utilizing economically the materials and forces of nature for the well-being of mankind." The engineer fully utilizes scientific principles and concepts. However, the modern practice of engineering is interdisciplinary, and the engineer must be both scientist and artist, both theoretician and pragmatist, both analyst and synthesist. In the words of the late Theodore von Kraman: "The scientist explores what is; the engineer creates what has never been." The modern engineer has the need to be broad as well as deep in his knowledge and interests, and his education must reflect this need.

General Information

Engineering at Duke University

Duke University, a privately supported institution of higher educatio in Durham, North Carolina, has about 7,800 students enrolled in nin divisions: Trinity College and The Woman's College (undergraduat liberal arts colleges for men and women), the Graduate School of Art and Sciences, and the professional schools—Divinity School, School o Engineering, School of Forestry, School of Law, School of Medicine, an School of Nursing. Annually student enrollments represent nearly ever state and approximately sixty-five foreign countries. The University i a member of the Southern Association of Colleges and Schools and of th Association of American Universities. The University also holds institu tional membership in relevant professional societies, including the Eng neering College Administrative Council and the Engineering Colleg Research Council.

As part of the University community, students in the engineerin programs share in a total educational experience that only a majo university can provide. The School of Engineering shares the sam campus with Trinity College, the Graduate School of Arts and Science the Divinity School, and the Schools of Forestry, Law, Medicine.

History

The School of Engineering of Duke University offers programs of instruction and research at all three degree levels: Bachelor's, Master's, and Doctor's. The School traces its origin to 1851, when the catalogue of Normal College, the forerunner of Trinity College and Duke University, advertised a "Classical" course which included surveying in the sophomore year and architecture and engineering for seniors. Similar offerings characterized instruction in engineering throughout the seventy-three-year period of the institution's operation as Trinity College.

With the change of name to Duke University in 1924 and the concomitant rapid evolution of the institution to its present status as a major university, the program in engineering entered a period of vigorous development which is still under way. Separate departments were established for civil engineering and electrical engineering in 1927, and for mechanical engineering in 1931. In 1937 these three departments were administratively grouped to form the Division of Engineering, which in 1939 was incorporated into the University structure as the College of Engineering, one of three coordinate undergraduate colleges of Duke University. Through the Graduate School of Arts and Sciences, the College began offering work leading to the Master of Science degree in 1957, and to the Doctor of Philosophy degree in 1960. In September, 1966, the name of the College was changed to School of Engineering in recognition of its professional status and of the stature that it had achieved in its program of graduate study and research.

Both on the campus and in the classroom the emphasis is on the individual. To this end classes are kept small and close contact is maintained between professor and student. As a matter of policy, the School is relatively small, with an undergraduate enrollment of about 500. Master's and doctor's work in engineering is offered through the Graduate School of Arts and Sciences.

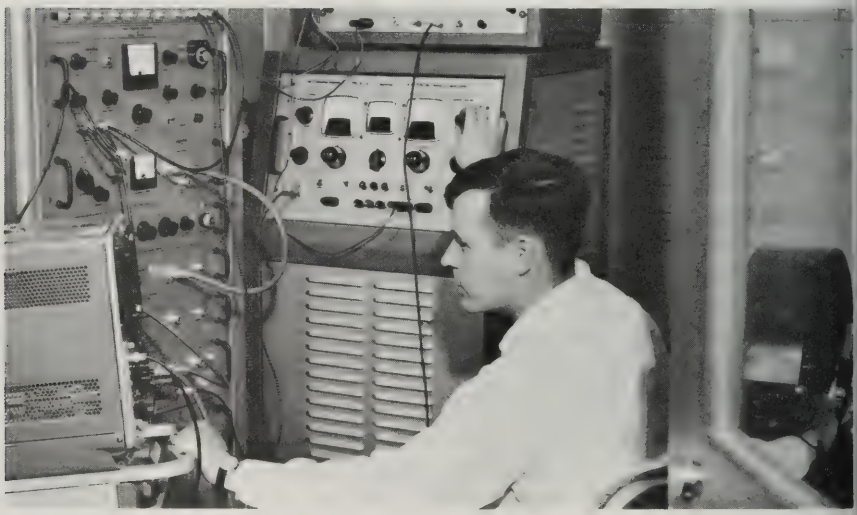
Organization

The affairs of the School of Engineering are administered by the Dean of the School, with the assistance of the Engineering Administrative Council which includes the Associate Dean, the Chairmen of the three Departments of Engineering, and the Research Coordinator. The affairs of each department of engineering are administered by the Chairman of that Department, with the assistance of the Department Faculty. Much of the administrative work of the School is carried out with the assistance of faculty committees.

The graduate programs are administered by the respective engineering departments in coordination with the Graduate School of Arts and Sciences.

The legislative body of the School of Engineering is its Faculty which is composed of the President, the Provost, the Secretary and all members of the University Faculty in the School of Engineering. The membership of the Engineering Faculty also includes the Director of Undergraduate Admissions for the School of Engineering and four members from Arts and Sciences who are elected annually by the Faculty of the School of Engineering, one from Mathematics, one from the Natural Sciences, and one each from two of the following three areas: Humanities, Social Sciences, and History. The Engineering Faculty has responsibility for the curriculum and for determinnig policies in those academic matters that pertain exclusively to the School and subject to the regulations of the University Faculty and its recognized legislative bodies.

The Engineering Faculty Council is composed of two representatives of each of the Departments of the School of Engineering. One of the representatives of each Department is elected by the members of the Faculty in that Department from their own group, and one is elected from each department by vote of the entire Faculty of the School of Engineering. The Dean of the School of Engineering is a member ex-officio. The EFC elects its own Chairman and Secretary, the latter serving also as Secretary to the Faculty of the School. The Council functions as a steering committee for the Faculty: its responsibilities include the preparation of agendas for meetings of the Faculty, and service as the Committee on Faculty Committees.



Physical Plant

The entire School is in a single building on the West Campus. It was first occupied in January 1948. Each of three wings houses the instructional and research laboratories and the special classrooms of one of the three engineering departments. The building also has offices, classrooms, and other general facilities including a library of some 39,000 volumes and 500 periodicals; an auditorium where audio-visual instruction can be given to large groups; conference rooms and seminar rooms; a student lounge; design rooms; facilities for reproducing copy of various types; a central precision shop; and central, as well as departmental computation facilities. The central computation facilities include a console with direct access to the large-scale IBM System / 360 Model 75 computer jointly operated by Duke University and the two nearby state university units.

Rapid evolution of the program of graduate study and research, and the accompanying growth of the Faculty and Staff, have made increasing demands on the physical plant. Accordingly, plans are under study for the enlargement of physical facilities for the school.



Programs of Study and Requirements for Degrees

The School offers fully-accredited engineering curricula. The degree of Bachelor of Science in Engineering (B.S.E.) is offered with majors in civil, electrical, or mechanical engineering and in selected interdisciplinary areas. Through the Graduate School of Arts and Sciences it also provides work leading to the degree of Master of Science (M.S.) and to the degree of Doctor of Philosophy (Ph.D.) in civil, electrical or mechanical engineering.

Undergraduate Degree Offered

Bachelor of Science in Engineering

The School offers a four-year program leading to the degree of Bachelor of Science in Engineering (B.S.E.), with opportunity for majors in the professional fields of civil, electrical, or mechanical engineering, as well as for programs in selected interdisciplinary fields such as biomedical engineering, engineering mechanics, energy conversion, materials, and systems and controls.

For graduation with a bachelor's degree in engineering, a minimum of

134 semester hours* of course work must be completed, including the following:

English. 6 s.h. This requirement is met by the completion of English 1-2.

Mathematics. 15 s.h. This requirement is met by completion of Mathematics 21, 22, 51, 63, and 111.

Natural Science. 16 s.h. This requirement is met by completion of Chemistry 1 and 2 and Physics 51 and 52.

Social Science and History. 6 s.h. This requirement may be satisfied by 6 hours from the following: Economics 1-2, or 51-52; History 1-2, or 51-52; Political Science 11-12 or 61-62; Psychology 91, to be followed by either Psychology 100 or 101; Sociology 91 followed by another sociology course.

Humanities. 6 s.h. This requirement may be satisfied by 6 hours from the following: English 55-56, 57-58; Classical Studies 111, 112, 121, 122; all foreign language literature courses above 100 not given in translation; Philosophy 41-42, 93-94; Art 51-52; Music 1-2, 51-52; Religion 1-2 or 51-52, 55, courses numbered 60-99.

Electives in Social Science, History, or Humanities. 6 s.h. In addition to the above, the student must elect a minimum of 6 semester hours of courses in social sciences, history, or humanities.

Physical Education. 4 s.h. Physical education is required during each of the first two years and is normally completed by the end of the sophomore year.

Departmental or Major Specifications. 43 s.h. In addition to the above requirements, 43 hours of courses in the third and fourth year are specified by the department in which the student is registered. A minimum of 16 hours of the 43 must be engineering courses of which 6 hours must be design-oriented studies.

Engineering Core Courses. 32 s.h. The normal engineering program includes 32 hours of engineering core courses, met by completion of Engineering 1, 2, 23, 53, 63, 73, 83, 101, 113, 123, 133, 143. Under special circumstances, a minimum of 10 hours of the normally required 13 hours of common-core engineering courses from the third- and fourth-year programs may be approved.

To provide the engineering student with the necessary background in

*A maximum of 6 hours of junior or senior level Air Science or Naval Science course work may be counted in satisfying the minimum requirements of 134 hours for a baccalaureate degree in engineering. These 6 hours may not be substituted for any of the above requirements in English, Social Sciences and History, Humanities, or electives in Social Sciences, History, and Humantities. All other credits earned in Air Science or Naval Science are taken in addition to the minimum program.

fundamentals upon which a variety of engineering programs of study can be based, and to relieve him of the necessity of committing himself immediately to a specific major branch of engineering, a common core of courses is provided for the freshman, sophomore, and part of the junior years.

Program of Studies for the Degree of Bachelor of Science in Engineering

Freshman Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Chem 1—Gen. Inorg. Chemistry	4	Chem 2—Gen. Inorg. Chemistry	4
Egr 1—Engineering Design I	2	Egr 2—Engineering Design II	2
Engl 1—Freshman Composition	3	Egr 23—Statics	3
Math 21—Introd. Calculus	3	Engl 2—Freshman Composition	3
Math 51—Digital Computation	3	Math 22—Introd. Calculus	3
PE—Physical Education	1	PE—Physical Education	1
	*16		*16

Sophomore Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
†Egr 73—Mechanics of Deformable Bodies	3	†Egr 53—Egr Design III	2
†Egr 83—Structure & Properties of Solids	3	†Egr 63—Introductory Electric Systems I	4
Social Science, History, or Humanities	3	Social Science, History, or Humanities	3
Math 63—Intermed. Calculus	3	Math 111—Appl. Math Anal. I	3
Phys 51—General Physics	4	Phys 52—General Physics	4
PE—Physical Education	1	PE—Physical Education	1
	17		17

Junior Year

(See departmental programs: pages 11, 14, or 17.)

Senior Year

(See departmental programs: pages 11, 14, or 17.)

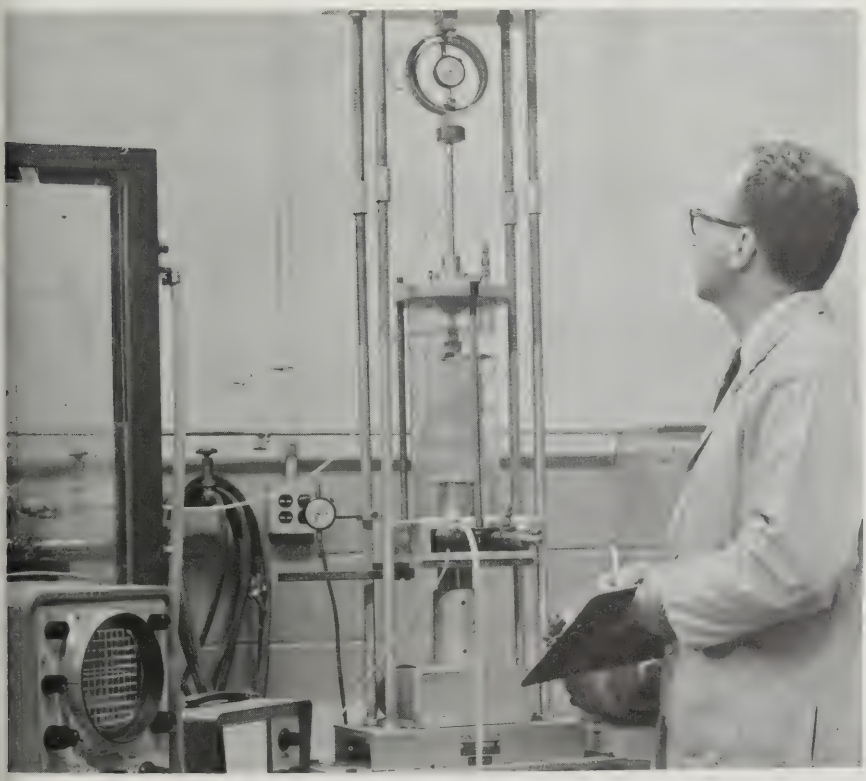
*Freshmen taking Air Science or Naval Science may need to schedule certain courses in addition to the 16 semester hours prescribed.

†The combination of Egr 73 and 83 is interchangeable with the combination of Egr 53 and 63.

Department of Civil Engineering

Although the scope of the civil engineering profession is very broad, its work may be classified into five major fields: *hydraulics*—flood control, river and harbor improvements, irrigation, drainage, and water power; *land utilization*—development of communities, industrial sites, and existing cities; *sanitary engineering*—public health, water supply, and waste disposal; *structures*—bridges, buildings, foundations, dams, tunnels, tanks, thin shells, and missile structures; *transportation*—railroads, highways, airports, waterways, pipelines, and traffic control.

The concern of the civil engineer is primarily with conception, design, and construction, although his responsibility often includes management and maintenance. His undergraduate education comprises scientific, technical, civic, and cultural subjects. In order that he may become qualified to assume responsible charge of engineering work, he must supplement this instruction with progressive study after he graduates and while he is securing his practical experience.



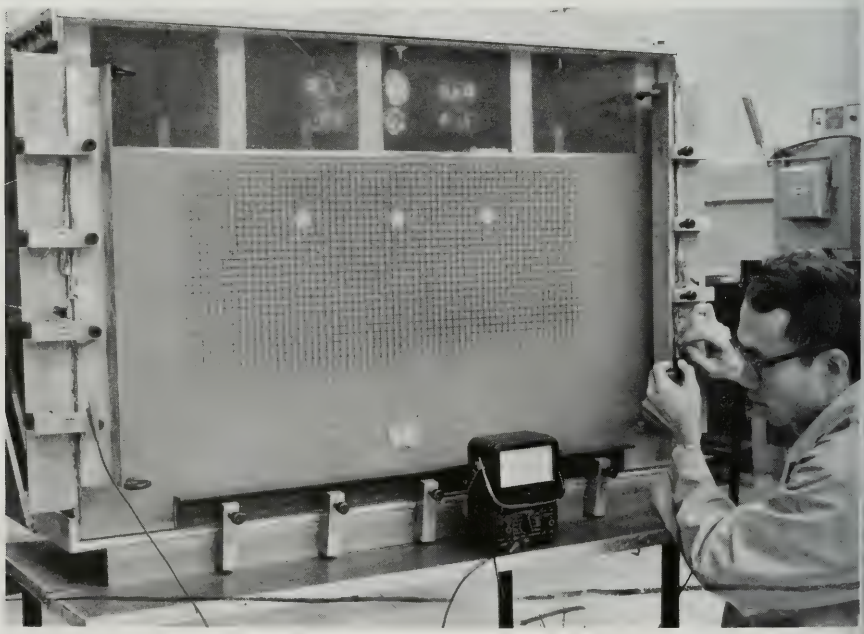
The *Mechanics of Materials Laboratory* is equipped to give instruction in the basic principles of stress and strain and for the testing of structural members. Its facilities are adequate for both graduate and undergraduate instruction. Included in this laboratory are universal testing machines with capacities to 400,000 pounds; hardness testers; machines for testing torsion, fatigue, and impact; calibration apparatus; and a variety of modern strain gages.

The *Materials Laboratory* has the equipment necessary for both research and instruction in the physical properties and stress-deformation characteristics of bituminous mixtures, concretes, and soils.

For research and instruction in *Stress Analysis* there are various polariscopes with facilities for taking and developing pictures, large-sized Begg's deformeter, loading frames, and miscellaneous tools for preparing accurate models for testing. Modern electrical and mechanical instrumentation is available for strain measurements.

The department has a representative collection of *Surveying Equipment*: transits, levels, plane tables, accessory equipment, precise levels and theodolites.

The *Sanitary Engineering Laboratory* is equipped for instruction and research in the characterization of waters and wastewaters, and in the application of biological, chemical and physical sciences to the solution of technical problems relating to environmental health.



Program of Study in Civil Engineering for the Bachelor of Science in Engineering Degree

For *freshman* and *sophomore* years see page 8.

Junior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Δ*Social Science, History, or Humanities	3	Δ*Social Science, History, or Humanities	3
*Egr 113 Electric Systems II	3	*Egr 101 Thermodynamics	3
*Egr 123 Dynamics	3	*Egr 133 Heat Transfer	2
*Egr 143 Fluid Mechanics	2	CE 96 Measurements	3
CE 131 Structural Mech. I	3	CE 123 Hydraulic Engrg	3
ΔApproved Elective	3	ΔApproved Elective	3
	17		17

Senior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Δ*Social Science, History, or Humanities	3	Δ*Social Science, History, or Humanities	3
CE 118 Materials	2	CE 116 Transportation	3
CE 124 Sanitary Engrg.	3	CE 134 Struct. Design II	3
CE 133 Structural Design I	3	CE 150 Engrg. Systems	2
CE 139 Soil Mechanics	3	CE Elective	3
ΔApproved Elective	3	ΔApproved Elective	3
	17		17

Under special circumstances, a minimum of 25 semester hours of the normally required 31 semester hours of Civil Engineering courses may be approved by the Director of Undergraduate Studies.

First Graduate Year

The Master of Science program is planned as the fifth year of a five-year sequence of studies. Admission to the Master's program follows completion of the requirements for the Bachelor of Science in Engineering

ΔPart of a program of electives planned with departmental approval to suit the interests and abilities of the individual student. The program will include a minimum of 6 semester hours of either economics or political science. The program will also include a minimum of 9 semester hours in mathematics, the natural sciences, or other technical subjects; English 93 will normally be part of these 9 semester hours.

*Common-Core Courses.

degree (at Duke University), or its equivalent (from another institution), and is contingent upon admission to the Graduate School of Arts and Sciences.

First Semester	*units*	*Second Semester*	*units*
CE 200- or 300-level course	3	CE 200- or 300-level course	3
CE 200- or 300-level course	3	CE 200- or 300-level course	3
**Minor course	3	**Minor course	3
Approved elective course	3	Approved elective course	3
Thesis research	3	Thesis research	3
	15		15

Subsequent Graduate Study

For further information concerning work leading to the M.S. degree, as well as that leading to the Ph.D. degree, refer to the sections of this Bulletin, beginning on pages 54 and 70.

Department of Electrical Engineering

Electrical Engineering utilizes the electrical and magnetic forces of nature and properties of matter to supply human needs. To an increasing degree its products and services influence the daily living of most of the world's population. It is concerned with the *processing and transmitting of information*—as in radar, television, radio and wire telephony, measurement, electronics, computation, and control. It is equally concerned with the *processing, transmitting, and controlling of energy*—as in solid state converters, magnetohydrodynamic generators, nuclear reactors, rotating machines, power systems, and automatic industrial processes. It provides most of our labor-saving home appliances and many of the instruments of modern scientific research and of modern medical practice.

The professional electrical engineer may engage in consulting, teaching, research, development, design, manufacturing, operation, maintenance, management and sales. His education must therefore provide a fundamental understanding of both the science of electrical engineering, which is based on mathematics and the physical sciences, and the art of electrical engineering, which depends on human imagination and judgment. It must also prepare him to be a responsible member of society by providing him with an appreciation of the humanities and the social sciences.

The program in electrical engineering at Duke, therefore, does not stress the mere acquisition of specific skills and methods, but seeks, in both classroom and laboratory, to stimulate students to think creatively in terms

**Normally Mathematics or Natural Science.

of fundamental concepts. It is hoped that, once started, creativity may become a habit. Such a program requires an able staff, extensive library resources, and well-equipped laboratories, such as are found here. The range of interests in electrical engineering which are included in this program may be conveyed by a brief survey of the laboratory activities.

The *Solid-State Materials Laboratory* is well-equipped for both instructional and research projects in which the macroscopic properties of materials, as exploited in devices, are studied at the microscopic and molecular levels. An X-ray diffraction diffractometer, a 9½-inch magnet, a spin-echo spectrometer, a vacuum deposition system, and metallurgical and stereoscopic microscopes are utilized in this work.

In the *Ferromagnetics Laboratory* investigations are being conducted into such properties of ferromagnetic materials as magneto-thermal, magneto-optical, magneto-resistive and magneto-strictive effects.

Research in the *Superconducting Circuits and Thin-Films Laboratory* is directed toward exploiting for engineering application some of the unique physical phenomena which are observed to obtain at temperatures in the vicinity of absolute zero. Related thin-film research is in progress. A major facility of this laboratory is an electron microscope providing a resolution of 7 Å.

The *Electronic Laboratories* are equipped for the study of the physical behavior of basic electronic components and of advanced electronic devices throughout the sub-radio frequency region.

In the *Energy Conversion Laboratory* the principles of generation, transformation, and control of energy are studied as they are applicable to large-scale power systems and small self-contained systems. Thermoelectric generators, photovoltaic sources, transformers, a-c and d-c motors and generators, and their associated controls are included in this work.

In the *Automatic Control Systems Laboratory* studies are made of the principles underlying the fields of instrumentation and automatic control. Modern, high-performance equipment is available for synthesizing control systems and for determining control system performance.

In the work of the *Spacecraft Systems Laboratory* principles from all phases of electrical engineering are brought to bear upon problems encountered in modern spacecraft technology.

In the *Spacecraft Telemetry Systems Laboratory* research centers on crosscorrelation techniques for the recovery of information contained in noisy signals received from scientific satellites and space probes.

In the *Microwave Circuits Laboratory* studies are made of microwave circuits and systems using both time-domain reflectometry and swept-frequency techniques. Applications to radar and communication systems are shown.

The *Cryomagnetic Materials Laboratory* is equipped for research in the area of magnetic susceptibilities of materials at very low temperatures.

In the *Underwater Acoustic Communications Laboratory* the design and performance of optimum receivers for processing underwater acoustic signals is being investigated.

In the *Biomedical Engineering Laboratory* research is conducted on a diversity of projects ranging from the application of field theory to problems in cardiography to the development of microminiaturized transducers for hemodynamic studies.

Program of Study in Electrical Engineering for the Bachelor of Science in Engineering Degree

For *freshman* and *sophomore* years see page 8.

Junior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
△*Social Science, History, or Humanities	3	△*Social Science, History, or Humanities	3
*Egr 113 Introd. Electric Systems II	3	*Egr 101 Thermodynamics	3
*Egr 123 Dynamics	3	*Egr 133 Heat Transfer	2
*Egr 143 Fluid Mechanics	2	*Egr 163 Fields	3
Math elective beyond Math 111	3	△Math elective beyond Math 111	3
Phys 161 Modern Physics	3	EE 161 Electronics and Signals	3
	17		17

Senior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
△*Social Science, History, or Humanities	3	△*Social Science, History, or Humanities	3
EE 162 Electromechanical Energy Conversion	2	EE 167 Design Colloquium	2
EE 163 Physical Electronics	3	△EE Elective	3
EE 164 Electromagnetic Fields and Waves	3	△EE Elective	3
△EE Elective	3	△Approved Elective	3
△Approved Elective	3	△Approved Elective	3
	17		17

△Part of a planned program of electives to be chosen in consultation with the Adviser.

*Common-Core Courses.

First Graduate Year

The Master of Science program is planned as the fifth year of a five-year sequence of studies. Admission to the Master's program follows completion of the requirements for the Bachelor of Science in Engineering degree (at Duke University), or its equivalent (from another institution), and is contingent upon admission to the Graduate School of Arts and Sciences.

First Semester	*units*	*Second Semester*	*units*
EE200- or 300-level course	3	EE200- or 300-level course	3
EE200- or 300-level course	3	EE200- or 300-level course	3
†Minor course	3	†Minor course	3
Approved elective course	3	Approved elective course	3
Thesis research	3	Thesis research	3
	15		15

Subsequent Graduate Study

For further information concerning work leading to the M.S. degree, as well as that leading to the Ph.D. degree, refer to the sections of this *Bulletin*, beginning on pages 54 and 75.

Department of Mechanical Engineering

The mechanical engineer is concerned with the design, control, and fabrication of machines for the production of useful energy or the processing of materials. He must lead in the development of new sources of power, propulsion, and transport. Included are the familiar internal combustion engine, steam turbine, nuclear reactors, and jet engines in use today, as well as fuel cells, thermionic and thermoelectric energy conversion, magnetohydrodynamic power, ion and plasma engines, and other new energy systems not yet known. The exploration of outer space and the depths of the oceans present challenging new problems. Further, there is the all-important task of providing the technological requirements of an ever increasing population with its demands for new products in food, shelter, comfort, entertainment, and work saving devices.

The curriculum in mechanical engineering has been planned to bridge the gap between the basic sciences on the one hand and the machine or process to be developed on the other. It is intended to prepare the individual for a career in (1) research and development; (2) design; (3)

†Normally Mathematics or Natural Science.

production, manufacturing, and operation; and (4) technical management.

Digital Computer programming is introduced at the freshman level and computer problem solving incorporated into engineering course work throughout the curriculum. Programs are processed either at the Duke Computation Center or by teleprocessing from the engineering building to a large core storage computer at the Triangle Universities Computation Center. Elective courses in computer-aided design make use of both analog and digital computation facilities in the School of Engineering.

The department operates undergraduate laboratories for *measurements, materials development and processing, nuclear power, thermal and fluid systems, dynamic systems response and control,* and *senior projects.*

The *Measurements Laboratory* emphasizes selection of measurement systems and data analysis. Included are experience with transducers, analyzers, and recorders for measurements of force, speed, flow rate, temperature, velocity, energy, and sound.

The modern *Materials Laboratory* provides equipment for the preparation, testing, and microscopic examination of material samples over a broad range of conditions. Metals, polymers, and ceramics, as well as naturally occurring materials are included. Advanced project work uses such special equipment as ultrasonic generators, injection molders, heat treating furnaces, arc-melting furnace, etc.

In the *Thermal and Fluid Systems Laboratory* studies are conducted on such equipment as analog computers, heat exchangers, refrigeration compressors, a CFR engine, low-speed wind tunnel, hydraulic loops and a vacuum-propulsion system. Instrumentation includes a Mach-Zender interferometer, thermocouple data systems, engine indicators, constant-temperature anemometers, proximity probes, pressure transducers, flow meters, and associated analyzers and recorders. New additions will include a Mach 4 supersonic tunnel and radiation heat transfer equipment.

The *Dynamic Systems and Control Laboratory* permits study of dynamic response on a programmable electrodynamic shaker, shock stand, and with mechanical, magnetic, and acoustic exciters. Oscillators, narrow and broad band frequency generators, spectrum analyzers, filters, magnetic tape recorders, and other modern instrumentation provide the diagnostic means for vizualization, analysis and interpretation. Stability and response of automatic control systems are studied by analog computers and some real hardware systems, including an autopilot.

In the *Senior Projects Laboratory* the student defines the need for experimentation, designs his "model" and instruments to provide the desired data on an advanced project of his choosing. Oral and written presentation of the results are a vital part of the laboratory experience.

Program of Study in Mechanical Engineering for the Bachelor of Science in Engineering Degree

For *freshman* and *sophomore* years see page 8.

Junior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Δ *Social Science, History, or Humanities	3	Δ *Social Science, History, or Humanities	3
*Egr 123 Dynamics	3	*Egr 113 Introductory Electric Systems II	3
*Egr 101 Thermodynamics	3	*Egr 133 Heat Transfer	2
*Egr 143 Fluid Mechanics	2	ΔApproved Elective	3
*Math elective beyond Math 111	3	ME 102 Thermo II	3
ME 133 Mechan. Design I	3	Phys 161 Modern Physics	3
	17		17

Senior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
Δ *Social Science, History, or Humanities	3	Δ *Social Science, History, or Humanities	3
†ME 122 Transport Phenomena	3	ME 161 Mech. Engrg. Lab.	2
ME 134 Mechanical Design II	2	ΔΔME Electives	6
ME 136 Response of Systems	3	ΔApproved Electives	6
ΔΔME Elective	3		17
ΔApproved Elective	3		
	17		

First Graduate Year

The Master of Science program is planned as the fifth year of a five-year sequence of studies. Admission to the Master's program follows completion of the requirements for the Bachelor of Science in Engineering degree (at Duke University), or its equivalent (from another institu-

ΔPart of a planned program of electives to be chosen in consultation with the Adviser.

*Common-Core Courses.

†With approval of the adviser, Egr 163 (Fields) or ME 226 (Intermediate Fluid Mechanics) may be substituted for ME 122.

ΔΔThree of the nine s.h. of ME electives must be design oriented. A current listing of design-oriented courses is maintained by the department.

tion), and is contingent upon admission to the Graduate School of Arts and Sciences.

First Semester	*units*	*Second Semester*	*units*
ME 200- or 300-level course	3	ME 200- or 300-level course	3
ME 200- or 300-level course	3	ME 200- or 300-level course	3
†Minor course	3	†Minor course	3
Approved elective course	3	Approved elective course	3
Thesis research	3	Thesis research	3
	15		15

Subsequent Graduate Study

For further information concerning work leading to the M.S. degree, as well as that leading to the Ph.D. degree, refer to the sections of this *Bulletin* beginning on pages 54 and 83.

Interdisciplinary Undergraduate Major

This major parallels the majors in civil, electrical, and mechanical engineering and, subject to faculty approval, is offered in selected areas such as biomedical engineering, engineering mechanics, energy conversion, materials, and systems and controls.

The following requirements govern the interdisciplinary major:

1. The program shall meet the requirements of the Bachelor of Science in Engineering degree as outlined on pages 6-8, and shall in addition contain the requirements:
   (*a*) A minimum of 16 s.h. of engineering course work in addition to common-core courses must be taken in the third and fourth years, of which 6 s.h. must be design-oriented studies.
   (*b*) Limitation shall be placed on the amount of work which can be taken in a given department during the third and fourth years so that the advantages of interdisciplinary studies may be realized.
2. Each student enrolled in an approved interdisciplinary program shall be assigned to an appropriate engineering department for administrative purposes.

Division of Biomedical Engineering

Biomedical engineering is often defined as the application of the concepts and methods of the physical, mathematical, and engineering

†Normally Mathematics or Natural Science.

sciences to biology and medicine. This definition covers a very broad spectrum ranging from formalized mathematical theory through experimental science to practical clinical applications. The purpose of the undergraduate program in biomedical engineering is to permit engineering undergraduate students who plan to dedicate their professional careers to the biomedical area to prepare themselves adequately for graduate work in biomedical engineering, medicine, or biology. This program is flexible and statisfies the requirements for entrance to either graduate work in biomedical engineering or medical schools.

Program of Study in Biomedical Engineering for the Bachelor of Science in Engineering Degree

For *freshman* and *sophomore* years see page 8.

Junior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
△Social Science, History, or Humanities	3	△Social Science, History, or Humanities	3
*Egr 113–Intro. Electric Systems II	3	*Egr 123–Dynamics	3
Math 112–Appl. Math. Analysis II	3	Egr 101–Thermodynamics	3
Chem 151–Organic Chem	4	Chem 152–Organic Chem.	4
Biology 1–General Biology	4	Biology 2–General Biology	4
	17		17

Senior Year

First Semester	*s.h.*	*Second Semester*	*s.h.*
△Social Science, History, or Humanities	3	△Social Science, History, or Humanities	3
*Phys 161–Modern Physics	3	*Egr 163–Fields	3
*Egr 133–Heat Transfer	2	*Egr 143–Fluid Mechanics	2
Egr Elective	3	Egr Elective	3
Egr Elective	3	Egr Elective	3
△**Elective	3	△**Elective	3
	17		17

△Part of a planned program of electives to be chosen in consultation with the Adviser.

*These courses may be interchanged in any manner that maintains 17 s.h. per semester.

**It is recommended that students utilize these electives to strengthen their biomedical competence.

Graduate Degrees Offered

Through the Graduate School of Arts and Sciences the School of Engineering offers work leading to the degree of Master of Science (M.S.) and to the Doctor of Philosophy (Ph.D.) degree with a major in civil, electrical, or mechanical engineering.

Master of Science and Doctor of Philosophy Degrees with a Major in Engineering

Students with superior undergraduate, or introductory graduate, preparation in appropriate fields may participate in graduate study programs in engineering leading to the degrees of Master of Science and Doctor of Philosophy. The Master's degree requires successful completion of a minimum of 30 units of graduate work: 12 in engineering, 6 in related minor work, 6 in either the major or minor field or a relevant third field, and 6 for a research-based thesis. The doctorate requires, beyond the Bachelor's degree, twice as many units of credit in each category as does the Master's degree, and, in addition, a reading knowledge of two foreign languages which are relevant to the field of the dissertation (normally two of the following: French, German, or Russian; foreign students may elect English as one of the required languages). Whereas the Master's thesis is expected to show the candidate's ability to conduct individual research, the doctoral dissertation is expected to demonstrate his ability to complete in a superior way a program of independent and original research. Each graduate student participates in seminars which are appropriate to his area of specialization.

Programs of Study in Civil Engineering for the Degrees of Master of Science and Doctor of Philosophy

Programs of advanced study, research, and design are available in six major areas: *engineering mechanics, structural engineering, soil mechanics and foundation engineering, hydraulic engineering, materials science and engineering,* and *sanitary engineering.* The Department also participates in two interdisciplinary programs of graduate instruction and research; these are *biomedical engineering* and *ocean engineering.*

Since the programs in most of these areas are interrelated with those offered in other engineering and science departments at the University, the Duke engineering curriculum offers a high degree of flexibility in individual study programs. Appropriate combinations of the major areas mentioned with other areas of study are encouraged. Both science-oriented and engineering-design-oriented activities can be selected to accommodate a wide range of student interests. For instance, there are

interdisciplinary programs now available in biomedical engineering and in materials science and engineering.

The graduate programs, as well as research and design activities, are planned to prepare advanced students for positions of leadership in the civil engineering profession.

A minimum prerequisite to the graduate program in civil engineering is a basic knowledge of mathematics through linear differential equations, materials science, solid mechanics, and fluid mechanics.

Programs of Study in Electrical Engineering for the Degrees of Master of Science and Doctor of Philosophy

The Department of Electrical Engineering is currently engaged in an extensive program of graduate instruction and research relating to man and his environment. More specifically, this program is concerned with four major technical areas: (1) *fields and materials*, the mutual interaction of which is exploited in devices and systems; (2) *the processing and transmitting of information*, as in television, radar, telemetry, measurement, electronics, computation, and control; (3) *the processing, transmitting, and controlling of energy*, as in solid-state converters, nuclear reactors, rotating machines, power systems, and automatic industrial processes; (4) interdisciplinary activities, as exemplified by *biomedical engineering*. Direction and impetus for the program derive both from the interests of students and faculty and from the needs of industry and of government agencies. The production both of significant new knowledge and techniques and of highly qualified new researchers and practitioners is the goal of the graduate program in electrical engineering at Duke.

A minimum prerequisite to the graduate courses in electrical engineering is a basic knowledge of differential equations, electric and magnetic field theory, and the theory of networks. A previous course in modern physics is recommended.

Programs of Study in Mechanical Engineering for the Degrees of Master of Science and Doctor of Philosophy

The Department of Mechanical Engineering is engaged in a program of instruction and research directed toward the more effective generation, use, and control of power through the application of scientific and engineering knowledge of materials, mechanics, and energy transfer. At the graduate level emphasis is placed on advanced study, research, and design in three primary areas of *thermal and fluid systems, design and control of machines and processes,* and *development of materials.* Included are experimental and theoretical studies of heat and mass transfer, thermodynamics, fluid mechanics, vibrations, dynamics of physical systems and machinery, automatic control, power generation, propulsion,

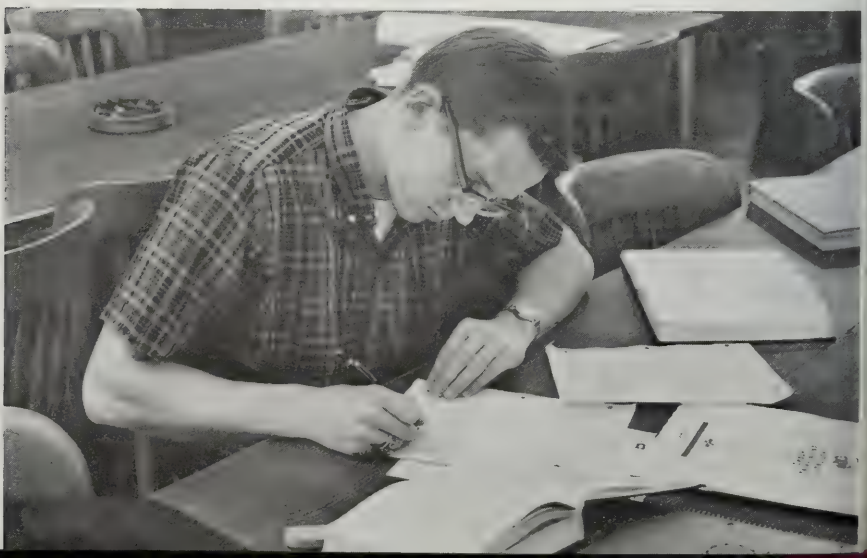
refrigeration and cryogenics, nuclear engineering, machine design, and the structure and forming of materials including metals, polymers, and ceramics.

Cooperating with the Division of Biomedical Engineering (a joint division of the School of Engineering and Duke Medical Center), the department conducts research in biomechanics, biomaterials, and thermal, fluid, and mass transfer problems in biological systems. Other interdisciplinary research programs are starting in oceanographic engineering, interaction of fields and materials, transportation engineering, and signal processing and communications. Involvement with various cooperating departments and schools at Duke University is one of the goals for graduate students involved in these interdisciplinary programs. Increasing emphasis is placed on the development of creative abilities of graduate students, and on relating the research to the needs of an era of exploding population and technical progress.

A minimum prerequisite to the graduate courses in mechanical engineering is a knowledge of solid and fluid mechanics, energy processes, materials science, and advanced engineering mathematics.

Programs of Study in Biomedical Engineering for the Degrees of Master of Science and Doctor of Philosophy

An interdisciplinary program in biomedical engineering leading to the M.S. and Ph.D. degrees is offered. Students presently write their theses and take their degrees in one of the engineering departments or physiology. The purpose of this program is to encourage the optimum combining of engineering and biomedical course work with an interdisciplinary research topic so that the graduates of this program can contribute at the most advanced professional level to the interdisciplinary field of biomedical engineering. The major research areas available include: biomechanics, biomedical materials, quantitative diagnosis, data acquisition and processing, and electrophysiology.



Undergraduate Special and Cooperative Programs

Reserve Officers Training Corps

Through the Naval and Air Force Reserve Officers Training programs the University is cooperating with the Department of Defense in providing well-educated officers for the active and reserve forces of the nation.

The Naval Reserve Officers Training Corps

There are two basic programs through which students can qualify for Naval commissions upon graduation: one, the Regular Naval Reserve Officers Training Corps program, provides a maximum of four years in the University largely at government expense, followed by a commission in the regular Navy or Marine Corps; the other, the Contract program, leads to a commission in the Naval Reserve or the U. S. Marine Corps Reserve. Additional information may be found in the *Bulletin of Undergraduate Instruction.*

The Air Force Reserve Officers Training Corps

The unit functions as a regular department of instruction known as

the Department of Air Force Aerospace Studies. It selects, trains, and commissions college men who possess the requisite character, intelligence, desire, and sense of duty to become Air Force officers. Additional information may be found in the *Bulletin of Undergraduate Instruction.*

Advanced Placement Program

Course placement is accomplished on the basis of good performance on either the Advanced Placement Examinations of the CEEB or—to a more limited extent—on placement tests given by Duke during Freshman Week. The College Board Advanced Placement Examinations are a vehicle to courses on the sophomore level or higher placement in botany, chemistry, English, French, German, history, Latin, mathematics, physics, Spanish, and zoology, whereas the Duke tests are used to decide such placement only in foreign languages, biological science, and mathematics. A further distinction is that only the AP Examinations may lead to credit toward graduation for the course or courses omitted and waiver of *uniform course requirements.* The departmental directors of undergraduate study and the University Registrar are charged with the responsibility for evaluations leading to advanced placement of freshman matriculants.

Advanced Placement Examinations are given in May by the College Entrance Examination Board. Information regarding the tests may be obtained from the Board.

Study Abroad

A student contemplating study abroad should be guided by the provisions established by the Undergraduate Faculty Council and administered by the Committee on Study Abroad. For details, see *Bulletin of Undergraduate Instruction.*

Summer Study Abroad

Duke University, in cooperation with the Experiment in International Living, runs a summer program of study abroad in France, Germany, and Spain, open to all qualified Duke students. The program offers the opportunity to earn six to eight hours of academic credit. Participants are selected by the Committee on Study Abroad and the Experiment in International Living. Applications must be submitted before February 15 to qualify for a summer group.

Eligibility for Special Curricular Programs

Reading-out of Introductory Courses

The option to "read" in order to by-pass introductory or pre-requisite courses is open to students of demonstrated academic ability to allow them to advance at their own pace to upper-level work. This opportunity ensures a richer program for the student who has few places in his curriculum for electives. Any student interested in reading during the summer to by-pass an introductory or pre-requisite course must be recommended by his dean and secure the permission of the department concerned. Reading for a course and auditing are mutually exclusive procedures. A proposed program of reading should be approved by the Director of Undergraduate Studies in the department in which the work will be done. On passing a three-hour qualifying examination prepared by the department a student may be certified for advanced course work in the area. On completion of an advanced course, an entry will be made on his permanent record that he has passed a qualifying examination but no course credit is awarded. Interested students should request further information from the Dean's Office.

Independent Study

Upon recommendation of the department, a student may be permitted to enroll for independent study during his junior and/or senior years. A student need not be in a Graduation with Distinction program to enroll in independent study courses. The maximum credit allowed for independent study and honors research courses is three semester hours per semester during the junior year and six semester hours per semester during the senior year. Interested students should consult the Director of Undergraduate Studies in the department in which they wish to work.

Graduation with Distinction

Programs featuring independent study and other honors opportunities are available under the title Graduation with Distinction in all three departments. Although the details and requirements of the program vary from department to department, certain general requirements are uniform. Each department participating invites, at the end of their junior year, those students who have maintained at least a "B" average in the major field and an over-all average of "B" to enter the Graduation with Distinction Program. Upon recommendation of the department and with the permission of the Honors Committee, a student with an average slightly below "B" may be admitted to the Graduation with Distinction Program. However, he must achieve a "B" average in his major department and an



overall average of "B" by graduation to be eligible for Graduation with Distinction in his major field. After participation in a senior seminar, and/or a directed course of reading, laboratory research, or other independent study, the student must embody the results of his individual research and study in a distinguished piece of writing. The paper is assessed by a departmental committee which, if it approves, recommends that the student be Graduated with Distinction in his major field. Interested students should consult the Director of Undergraduate Studies in the appropriate department.

Reciprocal Agreement with the Consolidated University of North Carolina

Under a plan of cooperation between the Consolidated University of North Carolina and Duke University, students regularly enrolled at Duke University during the regular academic year, and paying full fees to that institution, may be admitted to a maximum of two approved courses per semester at the Consolidated University upon payment of a nominal registration fee of two dollars and of any other special fees regularly required of all students.

This privilege pertains to both undergraduate and graduate students.

Student Life

Living Accommodations

As the undergraduate units of the University are resident institutions, all students are required to live in the residence halls. Any exceptions must be approved by the Dean of Men or the Dean of Women. Rooms are not rented for a shorter period than one semester. No refund of room rent will be made except for involuntary withdrawal to enter the armed services. Such refunds are made in accordance with the University's established schedule. (See *Financial Information* for living expenses.)

*Housing**

Undergraduate Men. Upon their admission to the School of Engineering, men students are sent detailed information by the Office of Housing Management concerning their obligations under the housing contract. Certain houses are reserved for members of the freshman classes. Each of these units has a resident Head Housemaster and one or more Housemasters. A limited number of Freshmen reside in other houses where they live in community with upperclass students and a Fellow, a Faculty member or an advanced graduate student who serves as their adviser.

Undergraduate Women. Women students enrolled in engineering live in the residence houses of The Woman's College. (A section of the Grad-

*Information pertaining to residence halls and Duke University Apartments is subject to change prior to September, 1968.

uate Center, West Campus, is also reserved for undergraduate women.) These houses are alike in their organization. In each of them there is a resident House Counselor, who is a member of the Dean's staff, and full representation from all four classes, with the appropriate number of places reserved each year for freshmen.

Graduate Housing. Duke University strives to provide comfortable, attractive living facilities for resident students both married and unmarried.

Graduate Center is available to men enrolled on a full-time basis in the graduate or professional schools. The majority of rooms are occupied by two persons. A limited number of single rooms are available but are generally reserved by students who have been in residence the previous year.

Town House Apartments and a section of the Graduate Center are available to women enrolled in the graduate and professional schools.

Duke University Apartments are available for full-time graduate and professional students. The 224 units are complete with basic furnishings.

For details concerning living accommodations, see page 39 of this *Bulletin* or the *Bulletin of the Graduate School of Arts and Sciences.*

Dining Facilities

The dining facilities on the West Campus include two cafeterias, with multiple-choice menus, and the Oak Room where full meals and *a la carte* items are served. The dining halls in which all resident women have their meals are located in the Woman's College Union and in Gilbert-Addoms residence hall. Because of the large number served in the dining halls, it is not possible to arrange special diets for individual students. The Graduate Center has a cafeteria and a coffee lounge.

Services Available

Medical Care

The Student Health Program is closely related to the Teaching Hospital of the Duke University Medical Center. This arrangement provides an unusually comprehensive service, available at all times. The cost, for regularly enrolled students, is included in the general fee paid each semester and in the fees charged each student in the summer quarter.

For details concerning medical care, see the *Bulletin of Information and Regulations, Trinity College and the School of Engineering* or the *Bulletin of the Graduate School of Arts and Sciences.*

The Counseling Center

The University maintains a counseling center which provides educational, vocational, and personal counseling for students. The Center is the administrative agency for most of the national testing programs, including admissions tests for graduate and professional schools. A library of information on occupations, graduate training, and fellowships for graduate study is maintained.

The counseling and information services of the Center are free to Duke students. Additional information on the counseling, testing, and information services may be secured from the Duke University Counseling Center, 309 Flowers Building, Duke University, Durham, North Carolina, 27706.

Appointments Office

The Appointments Office is a service agency designed to aid students and alumni in obtaining both summer and post-college employment. Its primary function is to serve as an intermediary between students, alumni, and prospective employers. It directs attention to possibilities in business and professional fields, it assembles comprehensive records on each registrant and makes these records available to appropriate representatives, and it arranges interviews with prospective employers. The Office initiates contacts for students or cooperates with students who make contacts through personal efforts or through various departments of the University. It aids the registrant in directing his search to a field appropriate to his aptitude, training, and interest.

There are two major divisions of the Office: the Commercial Division, which handles all matters involving contacts with business and professional areas not related to formal education; and the Educational Division, which concerns itself with teaching and school administration positions at all levels. Seniors, graduate students, and alumni may register with either or both of these divisions.

The Office receives more calls for qualified personnel than it can supply from its registrants. It is to the mutual advantage of the students and the Office that a complete record of registrants be assembled by the fall of the senior year or, in the case of graduate students, by the fall preceding the year during which they will seek employment.

Organizations and Activities

Engineers' Student Government

The Engineers' Student Council, composed of approximately 14 members from the various organizations and classes in the engineering

student body, coordinates the activities of all student organizations in the School. The Council acts to represent the interests of the students in their relationships with the public, the faculty, and the administration. The Council is responsible for such activities as the Engineers Show, homecoming displays, supervision of the student Lounge, social events, and the Engineers Guidance Council.

Engineering Student Publication

The DukEngineer, official student-published magazine of the School, which appears twice each semester, contains articles on technical and semi-technical topics and other matters of interest in the School.

Engineers' Radio Association

Membership in the Engineers' Radio Association is open to all students of the School who have an interest in amateur radio. The Association operates amateur radio station W4AHY and conducts code and theory classes for members who desire to obtain a Federal Communications Commission license.

General Activities Open to Engineers

As part of the University Community, students in the engineering programs share in all activities open to students.

Student Branches of Engineering Professional Societies

The three Departments of the School support student branches of the following national professional engineering societies: *American Society of Civil Engineers, American Society of Mechanical Engineers, Institute of Electrical and Electronics Engineers.*

Engineering Guest Speaker Program

In addition to his participation in the student branches of the national professional engineering societies, the student has the opportunity of additional development through the *Engineering Guest Speaker Program.* The general function of the series is to provide stimulating lectures by outstanding members of the engineering profession.

Engineering Honor Societies

Tau Beta Pi. Engineering national honor society—Gamma Chapter of North Carolina.

Chi Epsilon. Civil engineering national honor society—Duke University Chapter.

Eta Kappa Nu. Electrical engineering national honor society—Delta Lambda Chapter.

Pi Tau Sigma. Mechanical engineering national honor society—Pi Iota Chapter.

Order of St. Patrick. Honor society recognizing leadership in engineering student activities.

General Honor Societies

In addition to the national engineering student honor societies, students of the School are eligible for membership in the national and local honor societies throughout the campus.

Engineering Awards and Prizes

The Tau Beta Pi Prize is awarded each year by North Carolina Gamma Chapter of Tau Beta Pi, engineering national honor society, to a sophomore student in engineering for outstanding scholastic achievement during the freshman year.

The Walter J. Seeley Scholastic Award is presented annually by the Engineers' Student Government to that member of the graduating class of the School who has achieved the highest scholastic average in all subjects, and who has shown diligence in pursuit of an engineering education. The award was initiated to honor the spirit of academic excellence and professional diligence demonstrated by Dean Emeritus Walter J. Seeley. The Council hopes that this award will serve as a symbol of the man and the ideals for which he stands. The name of the recipient is inscribed on a plaque displayed in the Engineering Building.

The Hamilton Watch Award is presented by the Hamilton Watch Company to the senior in Engineering who has most successfully combined proficiency in his major field of study with notable achievements in social sciences and humanities. The award is a Hamilton electric watch, appropriately engraved, accompanied by a letter of commendation to the recipient.

The American Society of Civil Engineers Prize is awarded annually by the North Carolina Chapter of the American Society of Civil Engineers to two outstanding seniors in Civil engineering, upon recommendation of the Faculty of the Civil Engineering Department. The basis for selection is the student's scholastic record, his contribution to the Student Chapter, and his participation in other college activities and organizations. The Prize consists of a Certificate of Award and the payment of one year's dues in the American Society of Civil Engineers.

The American Public Works Association Prize is awarded annually by the North Carolina Section to an outstanding senior in Civil Engineering

upon the recommendation of the faculty of the Civil Engineering Department. The basis for selection is the student's scholastic record and his interest in a career in public works. The Prize consists of a Certificate of Award, one year's payment of dues in the American Public Works Association, and a $25 cash award.

The George Sherrerd III Memorial Award in Electrical Engineering is awarded annually to that senior student in electrical engineering who, in the opinion of the Electrical Engineering Faculty, has attained the highest level of scholastic achievement in all subjects and simultaneously has rendered significant service to the School of Engineering and the University at large. The Award was established in 1958 by the parents of George Sherrerd, III, a graduate of the Class of 1955, to recognize outstanding undergraduate scholarship. The recipient receives a monetary award and his name is inscribed on a plaque displayed in the Engineering Building.

The Charles Ernest Seager Memorial Award recognizes outstanding achievement in the annual Student Prize Paper Contest of the Duke Branch of the Institute of Electrical and Electronics Engineers. The Award, established in 1958 by the widow and friends of Charles Ernest Seager, a graduate of the Class of 1955, consists of inscribing the name of the contest winner on a plaque displayed in the Engineering Building.

The Milmow Prize is awarded annually to the student from North or South Carolina graduating in the Department of Electrical Engineering who, in the opinion of the Faculty of that Department and, as shown by his grades, has made the most progress in electrical engineering during his last year in School. The prize consists of a Certificate of Award and one year's payment of dues in the Institute of Electrical and Electronics Engineers for the membership year in which the honoree is awarded his baccalaureate degree.

The American Society of Mechanical Engineers Award is presented annually to a senior in mechanical engineering for his outstanding efforts and accomplishments in behalf of the American Society of Mechanical Engineers Student Section at Duke. The Award consists of a Certificate of Recognition.

The T. C. Heyward Award is given annually to the outstanding Mechanical Engineering Sophomore by Pi Tau Sigma. The Award will normally consist of a handbook as well as a small cash award.

The Machinery Magazine Award is presented annually by The Industrial Press, publisher of the magazine, to the outstanding student in machine design in the graduating class. The Award consists of a copy of the latest edition of *Machinery's Handbook*.

Admission

Undergraduate

New students are admitted for the academic year at the opening of school in the fall.

Because enrollment is limited, the Committee on Admissions selects those students who in its judgment are best qualified to benefit from the opportunities which the School offers. Selection is based not only upon academic grades and test scores but also upon recommendations of school officials and other personal criteria.

Requirements

Although there are no inflexible subject matter requirements, at least 15 acceptable units of secondary school credit must be presented. Of these at least 12 must be in college preparatory subjects: English, foreign language, history and social studies, mathematics, and physical or biological sciences. Applicants for the School of Engineering are advised to present four units of mathematics and at least one unit in physics or chemistry.

Students applying for admission are required to take the Scholastic Aptitude Test, the English Composition test, and two other achievement tests of their own choosing given by the College Entrance Examination

Board. Candidates applying to the School of Engineering must include the appropriate mathematics test.

Prospective students are urged to broaden their reading outside of class during their senior year and to make the acquaintance of books and magazines that do not form part of the subject matter of their courses. At the same time, they should take every opportunity to increase their competence in writing. Those who cannot write simple, clear, grammatical English prose will be progressively at a serious disadvantage in the competition for admission and also in the general work of the freshman year. Careful attention to correct English in correspondence and on application blanks cannot be too seriously stressed for candidates for admission.

Early Decision Plan

For the well-qualified student who has definitely decided to enter Duke if accepted, the University offers to reserve a place by "early decision" on December 1 of the student's senior year in secondary school. The deadline date for completing applications for Early Decision is November 1. Interested students should write to the Office of Admissions for detailed information.

Regular Admission

Candidates for regular admission must apply no later than January 15, and normally do so during the fall of the senior year. For this group, decisions are mailed by April 15.

Application forms and instructions regarding procedure and necessary documents to be included will be sent upon request to the Office of Admissions, Duke University, Durham, North Carolina, 27706. A nonrefundable processing fee of $10.00 must accompany the submission of the full application form.

A candidate for admission who wishes to arrange an interview should do so through the Director of Undergraduate Admissions.

Admission to Advanced Standing

Admission by transfer from other institutions may be arranged for a number of students under certain well-defined regulations. All such candidates must submit official transcripts of all work completed at other colleges, accompanied by a statement of honorable dismissal and scores on the Scholastic Aptitude Test of the College Entrance Examination Board. Courses on which a grade less than C has been earned cannot be accepted for transfer credit. Students may not apply for transfer beyond admission to the junior class. Further detailed regulations for admission by transfer may be obtained from the Office of Admissions.

A small number of special students of mature age may be admitted for such courses of instruction as their earlier training and experience may qualify them to take. They may not be accepted, however, as candidates for a degree in a regular course unless they are able to meet all normal requirements for admission which apply to all beginning students.

Readmission of Former Students

A student who desires to return, following withdrawal from the University should apply to the Director of Undergraduate Admissions. He will be asked to send a detailed statement of his activities since withdrawal. If practicable, the student should arrange for an interview with the appropriate Dean of the School.

Graduate

Prerequisites

A student seeking admission to the Graduate School of Arts and Sciences of Duke University with a major in engineering must have received a Bachelor's degree from an accredited institution. His undergraduate program should be well rounded and of such quality as to give positive evidence of capacity for graduate study. Normally he should have majored in the area of his intended graduate study. The three Departments of Engineering list specific prerequisites in the section of this Bulletin entitled "Graduate Degrees Offered."

Students Requiring Admission

Admission is required of (1) all students who intend to pursue study toward a degree offered by the Graduate School, (2) all other students who desire credit for whatever purpose for graduate courses—except students who register as Special Students in the Summer Session. Students who have discontinued a program of study after earning a master's degree here must by letter request permission of the Dean of the Graduate School to undertake a doctoral program. Members of the Duke University faculty will be granted only Non-Degree Admission.

Procedure for all Applicants

A student seeking admission to the Graduate School should request the Dean of the Graduate School to send an application blank. This he should fill out completely and return promptly. In addition he should provide the following supporting documents: (1) a transcript or transcripts of all his

undergraduate and graduate work mailed directly by the Registrar to the Dean; (2) as soon as possible, supplementary transcripts showing completion of work in progress when the earlier transcript was made; (3) three letters of recommendation written by persons best qualified to judge him as a prospective graduate student and mailed directly to the Dean; and (4) scores on the Graduate Record Examination (recommended for all applicants and required of applicants for fellowships) and Miller Analogies Test (recommended for all applicants).

All applicants except foreign students applying from outside the United States and non-degree students must include an application fee of $5.00 in check or money order payable to Duke University.

Additional Procedure for Foreign Students. Fully qualified students from outside the United States are welcomed in the Graduate School to take courses and in many instances to study toward a degree. In addition to the information required of all students, the foreign student should submit with his application for admission certain special information, as outlined in the *Bulletin of the Graduate School of Arts and Sciences.*

Closing Dates for Applications

Because applications cannot be reviewed until all required supporting documents are filed, applications for admission to the Graduate School of Arts and Sciences should be submitted at least *two weeks* before the closing dates listed below:

Fall semester, admission and award	February 15
Fall semester, admission only	August 1
Spring semester, admission only	January 1
Summer Session,* First Term	May 12
Summer Session,* Second Term	June 20

Notification of Admission

When admission to the Graduate School is approved, the student will receive a letter of admission and an acceptance form. The process of admission is not complete until the statement of acceptance has been returned. (For a more complete discussion of admission status, refer to the *Bulletin of the Graduate School of Arts and Sciences.*

*Students seeking admission to the Summer Session should make application to the Dean of the Graduate School as well as to the Director of the Summer Session.

Financial Information

Undergraduate Fees and Expenses

Fees paid by the students cover only a part of the cost of their instruction and of the operations of the University. Income from endowment and contributions from the alumni, alumnae, and other public-spirited men and women meet the balance, which constitutes more than half the total cost.

Estimated Expenses for an Academic Year

Certain basic expenditures are to be considered in preparing a student's budget, such as tuition, the general fee, room and board. These necessary expenditures together with a reasonable amount allotted for miscellaneous items such as books and supplies are shown below:

	Men	*Women*
Tuition	$1,600.00	$1,600.00
General Fee	200.00	200.00
Room Rent (Double Room)	335.00	360.00
Board	* 600.00	† 500.00
Books and Supplies	120.00	120.00

*Cafeteria estimate. †Board rate.

It should be realized that additional expenses will be incurred which will depend to a large extent upon the tastes and habits of the individual. It is realistic to suggest that the average Duke student, however, can plan on a budget of $3,300.00 for the academic year. Travel costs, clothing purchases, and other major expenditures would have to be added to this estimate.

Debts

No records are released and no student is considered by the faculty as a candidate for graduation until he has settled with the Bursar for all indebtedness.

Bills may be sent to parents or guardians provided the Bursar has been requested in writing to do so. Failure to pay bills on or before the due dates will debar the student from class attendance until the account is settled in full.

Tuition and Fees

Tuition and General Fee. The tuition of $800.00 and the general fee of $100.00 are due and payable not later than the day of registration for a particular semester. After the day of registration no refund of the tuition or the general fee will be made except for involuntary withdrawal to enter the armed services.

Registration Fees and Deposit. New students, on notification of acceptance, are required to pay a non-refundable first registration fee of $20.00 and to make a deposit of $50.00. The deposit will not be refunded to accepted applicants who fail to matriculate. For those who do matriculate, $25.00 of the deposit serves as a continuing room deposit for successive semesters, and the remaining $25.00 serves as a continuing registration deposit. Arrangements for refund of the $25.00 room deposit are described in information furnished each resident student by the Office of Housing Management.

Readmission. Students who have been readmitted to the University after an absence of one or more semesters, on notification of readmission, are required to make the $50.00 room and registration deposit.

Late Registration. Students who register in either semester at a date later than that prescribed in the Calendar of the School must pay to the Bursar a fee of $5.00.

Refunds. The $25.00 pre-registration deposit will be refunded to students (1) whom the University does not permit to return, (2) who graduate, or (3) who request the refund at the time of pre-registration, thus indicating their intention not to return for the following semester. The pre-registration deposit will not be refunded to students who pre-register and fail to enter the following semester on schedule.

ROTC Deposit. An Air Force ROTC deposit of $20.00 is required of students enrolling in Air Science to cover possible loss of military equipment issued to them. This deposit is refunded to the student upon return of issued equipment.

Fees for Special Students. In the regular academic year students who register for no more than two courses with a maximum credit of eight semester hours are classified as special students. They are charged a registration fee of $5.00 for each course and $55.00 for each semester hour of course credit. Registration for nine or more semester hours, or three or more courses, requires payment of full fees.

Fees for Auditing. Auditing of one or more courses without charge is allowed students paying full fees, provided that the consent of the instructor is obtained. Students who are enrolled for not less than three nor more than eight semester hours may audit other courses by payment of $27.50 for each course audited.

Fees for Duke Employees. In order to encourage its employees in their professional and personal advancement, Duke University will permit full-time employees who are paid on a monthly basis for two or more years to take one or two courses, but not more than seven semester hours and will charge $5.00 per course plus $27.50 per semester hour. Courses may not be audited unless at least one course is taken for credit.

Fees for Transcripts. Requests for transcripts should be directed to the Office of the Registrar. Ten days should be allowed for processing. One transcript is issued free of charge. Additional copies are supplied at $1.00 each.

Fees for Course Changes. Changes in courses for reasons not arising within the University require a payment of $1.00 for each change made. No course may be elected later than one week after the opening of the semester, and no student may be admitted to any class without an official enrollment.

Living Expenses

Housing. In the residence houses for undergraduate men, the rental charge for a single room is $445.00 for the academic year or $222.50 for each semester; for a double room the charge is $335.00 for each occupant, or $167.50 per semester for each occupant. Rental rates in the air-conditioned dormitories are $500.00 for a single room for the academic year, or $250.00 for each semester; for a double room the charge is $375.00 for each occupant, or $187.50 per semester for each occupant. Information concerning the student's obligations under the housing contract is published in the *Bulletin of Information and Regulations, Trinity College and the School of Engineering.*

In the residential units of the Woman's College the rental charge for a single room is $480.00 for the academic year or $240.00 for each semester. The rental charge for a double room is $360.00 for each occupant, or $180.00 per semester for each occupant. Detailed information concerning the student's obligations under the housing contract is published in the Woman's College Handbook.

Food Services. The dining facilities on the West Campus include two cafeterias, with multiple-choice menus, and the Oak Room where full meals and *a la carte* items are served. The cost for the academic year will approximate $600.00 but will vary from this amount depending upon the individual.

The dining halls in which all resident women have their meals are located in the Woman's College Union and in Gilbert-Addoms residence hall. The charge for board is $250.00 per semester, payable at the time of registration.

Graduate Fees and Expenses

The following table shows the general fees and charges collected from all graduate students. All fees for each semester are due and payable, unless otherwise specified, at the time of registration for that semester. All fees are subject to change without notice. No student is admitted to classes until arrangements have been made with the Bursar of the University for the settlement of fees.

Tuition and general fees* per semester (47.00 per unit)	$705.00
Athletic Fee, not including federal tax, optional, per year, payable in the fall semester	15.00
Binding fee, three copies of thesis or dissertation, other copies optional, $5.00 a copy	15.00
ETS Foreign Language Test, each administration, payable to the University Counseling Center	8.00
In absentia fee, due on date of registration one unit per semester	47.00
Late registration fee	5.00
Microfilming fee, doctoral degree only, upon final submission of dissertation	25.00

Housing (See detailed statement, *Bulletin of Graduate School of Arts and Sciences.*)

Tuition and fees for a full semester program of 15 units amount to $705.00. For a part program, tuition and fees are computed at the rate of $47.00 per unit.

*General fees, in lieu of most special charges, include the following fees: Matriculation, Medical, Library, Damage, Commencement, Diploma, and an average of the Laboratory and Material Fees.

Undergraduate Financial Aid

Duke University is interested in students with ability and ambition. It is the aim of the University Financial Aid Committee and others affiliated with the Financial Aid Program to provide, insofar as possible, the financial assistance required by students accepted for entrance who are unable to defray the cost of college from their own resources. The assistance is made available in the form of scholarships, grants-in-aid, loans, and part-time employment.

In 1967-68 financial aid totaled $1,638,000.00. Of this amount $996,648.00 was allotted to 1,191 undergraduate students in the form of scholarships, grants-in-aid, and remissions of tuition; $241,700.00 in student loans, and approximately $400,000.00 through part-time employment on the campus and in the city of Durham and the surrounding area.

Freshmen students shared proportionately in this aid: 352 received awards totaling $363,937.00 in direct assistance not including loans or part-time employment. Loans were made to 136 students totaling $69,850.00 in addition to other assistance received from Duke University.

Scholarships

All undergraduate requests for application forms for scholarships, grants-in-aid, industry scholarships, or remission of tuition should be addressed to the Office of Admissions, Duke University, Durham, North Carolina 27706.

All candidates for scholarships and grants-in-aid must submit an official Application for Admission to the University and the Application for Scholarship to the Office of Admissions. Scholarship candidates who desire to be considered for the maximum value of scholarships on the basis of financial circumstances are required to submit the "Parents' Confidential Statement" of the College Scholarship Service. The "Parents' Confidential Statement" may be obtained from high school principals or upon request from the Admissions Office.

Scholarship candidates should initiate their applications during the fall semester of their senior year of study in secondary schools. Instructions concerning the specific requirements and deadline dates will accompany the application materials sent to applicants for scholarships and grants-in-aid.

Awards annually available to all undergraduate students at Duke University are listed in the *Bulletin of Undergraduate Studies.*

Engineering Scholarships

Engineering Scholarship Fund was established by gifts of various persons, to be used for scholarship aid to engineering students.

Thomas R. Mullen, Jr., Scholastic Fund was established April 5, 1949, by gift of T. R. Mullen in memory of his son, the income to be used for scholarship assistance to students in the School of Engineering. Preference is to be given students who are children of employees of the Lehigh Structural Steel Company or others nominated by the Company. One award is available each year.

Jones Scholarship Fund was established in 1951 by Edwin L. Jones, Sr., '12; Annabel Lambeth Jones, '12; Edwin L. Jones, Jr., '48; Lucille Finch Jones; and the J. A. Jones Construction Company in memory of James Addison Jones and Raymond A. Jones; a portion of the income to be used for scholarship aid to worthy and qualified students in civil engineering.

Alcoa Scholarship in Engineering was established in 1962 by the Alcoa Foundation. One award of $625.00 per year is made to a student preparing for a career in either electrical or mechanical engineering.

Western Electric Fund Scholarship was established in 1957 by gift of the Western Electric Fund; a scholarship in the amount of $800.00 is given annually to an outstanding student in the field of electrical engineering who has completed the sophomore year of study.

Union Bag-Camp Corporation Scholarship was established in 1957 by gift of the Union Bag-Camp Corporation to provide a scholarship of $600.00 to a student in the fields of chemistry or mechanical engineering in alternate years.

Collier Cobb Associates Scholarship provides an award of $1,000 for the support of one or two worthy and needy students at the junior or senior level in the School of Engineering. The Program was established in 1967 by Collier Cobb and Associates, Inc.

Duke University participates in several other industry scholarship programs. Several of these awards for which freshmen may apply are assigned to engineering students annually although they are not restricted to students in this field of study. Among the available awards are the General Motors Scholarships and the Texas Company Scholarships.

Tuition Grants

Tuition grants are available to children of certain qualified staff members of Duke University for a maximum of eight semesters of undergraduate study at Duke.

Loans

Loan funds held in trust by the University as well as funds supplied by the federal government through the National Defense Education Act of 1958 are available to qualified students. Freshmen as well as upperclassmen are eligible to apply for a student loan.

For details concerning loans, see the *Bulletin of Undergraduate Instruction.*

The Student Loan Committee in approving loan applications selects those students who from the standpoint of character, scholastic attainment, personality, and degree of financial need deserve assistance.

Employment Opportunities

The Financial Aid Office maintains an employment office to serve students who need part-time jobs. There are many opportunities both on the campus and in the city of Durham. A considerable number of students each year help defray their college expenses by working.

Those students accepted for admission to the School of Engineering in need of part-time employment should apply to Financial Aid Office, Duke University, Durham, North Carolina 27706. Women students who need and qualify for part-time campus employment should apply to the Assistant Dean of Undergraduate Women, 111 East Duke Building, Duke University, Durham, North Carolina 27708.

Graduate Financial Aid

Awards through the Graduate School of Arts and Sciences

For the encouragement and financial assistance of graduate students of marked ability, Duke University has established a considerable number of fellowships, scholarships, and assistantships. The stipends for these range up to $4,000 for the academic year. Holders of grants pay tuition and other fees regularly required of all graduate students.

Fellows and scholars pay full tuition and fees and are expected to register for a full schedule of course work each semester. In general, assistants register for a four-fifths program and pay 12 units tuition and fees per semester.

Application for these awards, along with all supporting documents, must be submitted on or before February 15. Notification may normally be expected by late March. Late applications will be considered, should any vacancies occur in the list of appointees. No appointment is made for longer than one academic year.

Further information and application forms may be obtained from the Dean of the Graduate School, Duke University, Durham, N. C., 27706.

Special Fees for Teachers and Others

The Graduate School recognizes a special obligation to encourage the following types of students in their professional and personal advance-

ment: (1) members of the faculties of the neighboring public schools and colleges, currently engaged in *full-time* teaching while taking courses in the Graduate School, (2) ministers of neighboring churches, (3) wives of Duke faculty members, (4) *full-time* employees of Duke University who are paid on a monthly basis throughout the year for two or more years.* The reduced fees do not apply to teachers and ministers while on leave of absence, nor to holders of fellowships, scholarships, or graduate and research assistantships, nor to part-time instructors.

Persons eligible for the reduced fee must meet the admission standards required of all graduate students and must be admitted to the Graduate School. They may enroll for one or two courses per semester (in no case totaling more than 7 units) upon the payment of a fee of $5.00 for registration for each semester and a tuition fee of $25.00 per unit of credit or an audit fee of $25.00 per course.

Awards through the School of Engineering

The School of Engineering and its component departments are able to offer appointments as teaching and research assistants to graduate students in engineering. Stipends range up to $3,400 for the academic year.

Further information concerning these appointments and procedures for making application may be obtained from the Associate Dean for Graduate Study and Research, School of Engineering, Duke University, Durham, N. C., 27706.

Stipends and Income Tax

Ordinarily stipends awarded under fellowships and scholarships are not subject to income tax and Social Security Tax. However, a portion of the award to graduate assistants may be subject to tax. The Graduate Office will supply detailed information.

*Members of the Duke University faculty will be granted only Non-Degree Admission to the Graduate School of Arts and Sciences.

University Registration and Regulations

Undergraduate Registration

Pre-registration

Each new student receives a copy of the *Academic Guide for Freshmen* and the *Bulletin of the School of Engineering* in the summer, and submits a trial course program for his first semester. All other students pre-register for a given semester in the fall or spring of the year on the basis of information and advising available to them. Evidence that the continuing pre-registration deposit of twenty-five dollars has been paid (see page 38 for detailed information) must be submitted at the time of spring pre-registration. A student's tentative course program is filed for permanent record in the Central Records Office after each pre-registration. He may complete his registration by mail. Students who pre-register in either semester at a date later than that specified in the calendar of the colleges are subject to a penalty of $5.00, payable to the Treasurer. Students who do not pre-register within an allotted time must be readmitted to the school by application to the Director of Admissions.

Semester Opening and Registration

Each pre-registered undergraduate student is required to return to the

University each semester on registration day and to report to his college office by 6 p.m. Ample time should be allowed since failure to report entails loss of the continuing registration deposit and of registration in each class for which one is pre–registered. An official enrollment is required for admission to any class.

After pre–registration course changes may be made on registration day or during the first week of classes. Changes in courses for reasons not arising within the University entail a fee of $1.00.

Undergraduate Academic Regulations

Course Requirements

During each semester of the regular academic year, the academic program of an undergraduate student normally consists of five or six courses totaling 15-17 semester hours, exclusive of physical education. A maximum program of 19 semester hours exclusive of physical education has also been fixed since the University is committed to quality work and education that is not exclusively course centered. No student is allowed to take fewer than 14 semester hours of work without special permission from the Dean or to take more than the normal load of work unless his average grade in the preceding semester is higher than a C.

Course Audit

With the consent of the instructor, a full-time, degree student is allowed to audit one or more courses in addition to the normal program. After the first week of classes in any semester, no student classified as an auditor in a particular course may take the course for credit, and no student taking a particular course for credit may change classification to an auditor. A student may not repeat for credit any course he has previously audited. Auditors submit no daily work, take no examinations, and receive no credit for courses.

Course Changes

New courses may not be elected later than one week after the opening of classes during the semester. Procedures for withdrawal from a course are determined by each of the undergraduate colleges, but in any instance permission of the Dean is required.

Attendance Regulations

The attendance regulations specifically place the responsibility for class attendance upon the individual student. *He is expected to attend classes*

regularly and punctually. A student should recognize that one of the most vital aspects of a residential college experience is attendance in the classroom and that the value of this academic experience cannot be fully measured by testing procedures alone.

The members of the student body are considered sufficiently mature to appreciate the necessity of regular attendance, to accept this personal responsibility, and to demonstrate the kind of self-discipline essential for such performance and, conversely, to recognize and accept the consequences of failure to attend. An instructor is privileged to refer to the Dean for suitable action students who in his opinion are causing their work or that of the class to suffer because of absences or latenesses.

Absences from tests and required classes due to illness will be excused when certified by a proper medical official. Absences due to authorized representation of the University may be excused. Officials in charge of groups representing the University are required to submit names of those persons to be excused to the Dean's office 48 hours in advance of the hour when their absences are to commence.

Leave of Absence

An upperclassman in good standing may apply in writing to his dean for approval to take a leave of absence. If granted, the leave will begin at the end of the semester in which application is made and will last for one or two semesters. While on leave a student must inform his dean before November 1 (for a fall leave) or April 1 (for a spring leave) of his intention to return for the next semester. A student failing to meet the deadline will be considered to have withdrawn from the University and will have to apply for readmission.

Regulations for Participation in Athletics and Other Activities

Members of the athletic teams or other students groups engaging in public representation of the University are expected to be carrying their current work satisfactorily. Students may be barred from participation in such representation if, in the opinion the Dean, they fail to meet this requirement.

Grading

Final grades on performance in academic work are sent to students and parents, or guardians, after the examinations at the end of each semester. In addition, six-weeks advisory grade reports for freshmen are mailed each semester. Grade symbols are as follows:

Passing. A, exceptional; B, superior; C, average; and D, low pass. A passing grade may be modified by a plus (+) or a minus (—).

Failing. A grade of F indicates that the student has failed the course and that to receive credit for the course he must reregister for the course and repeat the work in class.

Pass-Fail Option for Elective Courses. With the consent of the instructor, a third or fourth year student may choose to be graded on a pass-fail basis in one free elective course each semester. A student accepted on this basis completes all the work of the course but receives either a pass (P) or fail (U) grade in lieu of a standard grade. The credit hours earned apply only in the total cumulative average, as do transfer and Advanced Placement credits. For that reason they are weighted as "C's" toward the required senior "C" average. A pass grade may not subsequently be converted to a regular letter grade nor may the course be retaken on a regular credit basis. After the first week of classes in any semester, no student classified as pass-fail in a particular course may change to regular registration and no student in regular registration may change classification to pass-fail.

Absence from the final examination. In all cases in which the student is absent from a final examination he receives an X instead of a final grade. If he does not present an acceptable explanation for his absence to the Dean's office within 48 hours after the scheduled time for the examination, the X is converted to an F. If the absence is excused by the Dean, the student arranges with the Dean and the instructor for a make-up examination. An X not cleared by the end of the semester following the examination missed is converted to an F.

Incomplete work. If because of illness or other emergency a student's work in a course is incomplete, he may receive an I for the course instead of a final grade. Incomplete courses must be completed before the close of the succeeding semester; otherwise, the I is converted to an F and the course must be retaken if the student is to receive credit for it. In case a student whose work is incomplete is also absent from the final examination, he receives an X for the course.

Withdrawal. The letter W is used to indicate official withdrawal from a course. If a student drops a course without such permission, a grade of F is recorded for that course. If he drops with permission a course in which he is failing, the grade for that course is recorded as an F unless in the judgment of the Dean circumstances do not require this penalty but permit a notation of a W to indicate official withdrawal.

Credits

The unit of credit used is the semester hour, which signifies one class period a week throughout the semester. Two or three hours of laboratory work are equivalent to one hour of class work.

Seniors who at the beginning of a semester lack no more than nine hours for the fulfillment of the requirements for the B.S.E. degree may enroll, with permission of the Dean of the Graduate School, in graduate courses for a maximum total program of 15 semester hours.

Advanced Placement Course Credit

Any student who has earned a score of three or higher on an Advanced Placement examination of the CEEB and is approved for placement in a sophomore-level course or above may be considered for course credit in appropriate subjects. For those presenting scores of four or five the award of credit will be made automatically upon matriculation; for those presenting scores of three it will be determined with the approval of the University department concerned no earlier than at the end of the first semester. Course credit may be granted for one or two semesters in each subject area in which examination is offered in the Advanced Placement Program.

Transfer Credit

Transfer credit is evaluated from regionally accredited, degree-granting institutions. Courses taken away from Duke in which grades of less than C have been earned are not acceptable for transfer credit. Credit for work completed at other institutions will be determined in relation to the curriculum requirements of the college in which the student enrolls at Duke.

Credit for courses in science or language offered for advanced standing in any of the undergraduate colleges by a transfer student from a junior college will be evaluated by the departments concerned.

The maximum amount of credit acceptable from a junior college is 60 semester hours, exclusive of physical education. No credit is given for work completed by correspondence, and credit for no more than six semester hours is allowed for extension courses.

Residence Requirements

The final four semesters—or equivalent—of work must be earned in residence except in those instances in which a student has been approved to take his junior year abroad or been granted a leave of absence. For engineering students, 30 of these 60 semester hours must be from those normally taken in the senior year. Students who meet this requirement but who still lack six to eight semester hours in final fulfillment of requirements may take this work in another institution of approved standing, provided the course is approved by the Chairman of their major department and by the Dean.

Quality Points and Class Standing

An overall indication of the quality of student performance is provided by assigning quality points per semester hour of a course as follows:

Grade	*Quality Points*	*Grade*	*Quality Points*
A+	4.0	C+	2.3
A	4.0	C	2.0
A—	3.7	C—	1.7
B+	3.3	D+	1.3
B	3.0	D	1.0
B—	2.7	D—	1.0
		F	0

On the basis of these points there is maintained for engineering students a Duke cumulative average determined by dividing the number of quality points earned at Duke by the total number of hours carried (not semester hours passed) at Duke. No grade is entered on a student's permanent record in the case of transfer credit or Advanced Placement Program credit. All honors at Duke as well as continuation and graduation requirements are determined on the basis of the Duke cumulative average.

A student in the School of Engineering matriculating after September 1, 1965, must achieve at least the following for continuation from:

The first to the second year	18 s.h. credit and a q.p.r. of 1.30
The second to the third year	46 s.h. credit and a q.p.r. of 1.60
The third to the fourth year	74 s.h. credit and a q.p.r. of 1.70
The fourth to the fifth year (if needed)	102 s.h. credit and a q.p.r. of 1.80

Freshmen must also pass at least six semester hours of work in their first semester, three required courses in the second semester, and 18 semester hours in the first year; all other students must pass at least nine semester hours each semester. Physical education credits are excluded in each case.

Senior Class Privileges. Students who have completed 96 or more semester hours of work including certain specially designated junior courses are eligible for privileges normally accorded seniors.

Requirements for Graduation. For graduation from the School of Engineering, in addition to completion of an approved curriculum, a student matriculating after September 1, 1965, must meet at least the following minimum requirements: the completion of 134 semester hours; a cumulative q.p.r. of 1.90; and a q.p.r. of 2.0 in all work, as well as in all engineering work, taken after having attained senior standing.

Commencement

Degrees are awarded in June at commencement to those who have completed requirements at the end of either regular semester of the academic year. They are awarded at the end of the summer to students who complete degree requirements in a summer session.

Eligibility for Undergraduate Academic Honors

Dean's List

In recognition of academic achievement, students who earn an average quality point ratio of 3.0 or higher on a semester's work of not less than the minimum academic load are placed on the Dean's List.

Class Scholars

The five students in each combined undergraduate class of the University (including Trinity College, The Woman's College, and the School of Engineering) who achieve the highest quality point ratio on at least a normal course load for each academic year shall be designated Class Scholars.

Class Honors

To be eligible for Class Honors a student must earn, during the year, credit for at least the minimum academic load permitted by the college in which he is registered. Students in the freshman, sophomore, and junior classes who earn a 3.50 quality point ratio on all work for the year are eligible for Class Honors.

Graduation Honors

To be eligible for consideration for Graduation Honors a student must have completed in residence a minimum of ninety semester hours. Students who earn an average of at least a quality point ratio of 3.50 are recommended for a degree *magna cum laude*. Those who earn a quality point ratio of 3.75 are recommended for a degree *summa cum laude*.

Graduation with Departmental Distinction

Graduation with Distinction in Civil, Electrical, or Mechanical Engineering is awarded to the student who, in the opinion of the department

and of a special committee of the faculty, has demonstrated exceptional achievement in the area of his special interest.

Distinguished Professor Seminars

(See *Bulletin of Undergraduate Instruction* for description.)

Graduate Registration

The requirements regarding who must register are as follows: (1) All students who enter course work or residence for credit; (2) all students who have completed minimum requirements for an advanced degree, but continue to use the facilities of the University in their research; (3) all students in *in absentia* status; and (4) all students who wish merely to audit a course or courses.

Registration

After the applicant has received notification of his admission to the Graduate School of Arts and Sciences and has returned his statement of acceptance of admission, he may present himself for registration. During the registration periods, announced in the Bulletin, he first confers with the Director of Graduate Studies of his major department, who prepares and signs a course card, listing the course work to be taken during the semester. The student then presents this course card to registration officials, who enroll him officially in his courses. After his first registration period as a current student he will pre-register at the stated times for pre-registration. Failure to pre-register incurs the penalty for late registration. Former students who intend to register to resume a degree program must give the Department and the Dean notice of this intention two months before registration.

Late Registration

All students are expected to register or pre-register at the times stated in the Bulletin. Those registering late are subject to a late registration fee of $5.00.

Change of Registration

During the academic year within a period of fourteen days from the registration date students may change registration with the approval of the Director of Graduate Studies, if no reduction of fee is involved, and with the approval of the Dean if reduction of fee is involved. Thereafter during the first thirty days from the registration date the only permissible

change is dropping course-seminar registration and adding equivalent units of research, with the approval of the Director of Graduate Studies, the instructor of the course, and the Dean of the Graduate School of Arts and Sciences.

Normal Registration

A graduate student is designated as fully registered when he registers for the maximum credit his program requires. Required registration is set in consideration of the student's obligation to teach or assist and the stage he has reached in completion of degree requirements. In the *academic year* normal registration for the resident student who does not hold an appointment as a part-time instructor or assistant or does not engage in part-time work is 15 units a semester or 30 units an academic year. The normal registration for the student who holds such an appointment or undertakes such work is either 12 units or a minimum of 9, depending upon the number of hours a week he is required to devote to such duties.

The resident student in a terminal master's program carries a normal registration until he has met all requirements except for submitting his thesis. Thereafter, until submission of the thesis, he registers for 3 units a semester while in residence or, if he elects to go out of residence, for 1 unit *in absentia* each semester until the thesis is accepted.

The resident student engaged in a master's program which is not terminal but preparatory to a doctoral program registers as though he were a doctoral student.

The resident student in a doctoral program carries normal registration through the semester in which he passes the preliminary examination. If he remains in residence, he continues to register for a minimum of 3 units a semester until the dissertation is accepted. If, before or after passing the preliminary examination, he elects to go out of residence, he registers for 1 unit a semester *in absentia* in order to keep his program active.

It is necessary to be a fully registered student according to the regulations listed above (except when registered in absentia) in order to establish eligibility for library carrel and laboratory space, for student housing, for University and some outside loans, for Student Health service including the voluntary Walker plan coverage, and for reporting status for military duty.

The registration of 1 unit a semester in absentia provides occasional consultation with the thesis or dissertation supervisor. It may be waived for military duty or serious problems of health.

In the Summer Session 6 units a term is maximum registration. Students resident in the academic year who wish to continue study and use of University facilities including Summer Session Student Health during the summer must register for 1 unit in the first Summer Session term. This registration provides use of these facilities for both terms.

Regulations Governing Graduate Degrees

Work in the School of Engineering toward the degree of Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) is taken subject to the regulations of the Graduate School of Arts and Sciences, as well as those of the School of Engineering.

Master of Science

Prerequisites

The degree of Master of Science is offered with a major in the fields of civil, electrical, and mechanical engineering. As prerequisites to this degree the student must have earned from an accredited college the Bachelor of Science in Engineering degree, or its equivalent, and completed a minimum of 12 semester hours work in the major field.

Residence Requirements

Candidates for the Master of Science degree must spend, as a *minimum*, one full academic year, or its equivalent as defined by the Graduate School of Arts and Sciences, in residence at Duke University. If after completion of the 30-unit requirement the candidate remains in residence, he must register for a minimum of 3 units per semester.

A Master's candidate who in the academic year presents a thesis when not registered in residence will be charged 1 unit of residence for the semester in which the thesis is presented. (For regulations governing work taken or requirements completed during the Summer Session see the *Summer Session Bulletin.*)

Foreign Language

There is no foreign language requirement for this degree.

Major and Minor Subjects

The work for the Master of Science degree is designed to provide a broad foundation at the graduate level in the fields of civil, electrical, and mechanical engineering. The student must present acceptable grades for a minimum of 24 units of graduate courses: at least 12 in course work in his major area of concentration in engineering (not necessarily confined to the offerings of the engineering department in which the student is registered); a minimum of 6 units in a minor subject outside of engineering which lends broad support to his program (usually in the mathematical or natural sciences); and the remaining 6 of the 24-unit course requirement in either the major or minor subject, or in an area

approved by the major department and by the Dean of Engineering. In addition to the 24-unit course requirement, the student must present a thesis, which carries a credit of 6 units. Thus his earned credit for the degree totals a minimum of 30 units.

Candidacy for the Master of Science Degree

To be considered as a candidate for the Master of Science degree, the graduate student must (1) have made passing grades in all courses taken during the first period of residence (if he registers for fewer than 12 units of graduate courses during his first period of residence, he must make passing grades on the first 12 units of graduate courses), (2) have made a grade of G or E on at least 3 units of this work, and (3) have received the approval of the major department.

Time Limits for Completion of the Master of Science Degree

The candidate for the Master of Science degree who is in residence for consecutive academic years should complete all requirements for the degree within two calendar years from the date of his first registration in the Graduate School. Any candidate must complete all requirements within six calendar years of his first registration.

The Thesis

The thesis should demonstrate the student's ability to collect, arrange, interpret, and report pertinent material on his special research problem.

Filing the Thesis Title. *On or before March 1 for a June degree* or on or *before July 1 for a September degree,* the student must file with the Dean of the Graduate School, on the official form, the title of the thesis and declaration of intention to graduate. If degree requirements have been met before the deadlines above, the intention to graduate must be filed one month before the thesis is presented. The title must have the approval of the Director of Graduate Studies in the major department, and of the thesis supervisor.

Preparing the Thesis. All basic requirements for preparing the thesis are described in the *Manual of Style for Theses and Dissertations,* revised 1961, obtained at the Duke University Book Store, West Campus. The quality of paper, form, and binding are prescribed in the *Manual.*

Submitting the Thesis. Four typewritten copies of the thesis bound in snap binders secured through the Graduate School Office must be submitted in approved form to the Dean of the Graduate School on or before May 1 for a June degree or August 15 for a September degree and at least three days before the scheduled date of the student's examination. The copies will then be distributed to the several members of the examin-

ing committee. Two copies for the Library and one for the adviser will be bound by the Ruzicka Bindery, fee $5.00 a volume. The student will state whether or not he wishes more than three so bound.

The Examining Committee and the Examination

The instructor who directs the thesis appoints an examining committee composed of himself and two other members of the Graduate Faculty, one of whom must be from a department other than that of the major. If the student has been permitted to take related work *within* the major department, the third member may represent the minor field within the department. This committee is submitted for approval to the Dean of the Graduate School when the thesis is first presented.

The candidate appears before this committee for an examination which lasts for about one and one-half hours. The subject matter covered in the examination is usually restricted to the thesis and to the major field.

If the candidate passes his examination, the examining committee certifies this fact by signing the title page of all copies of the thesis. The candidate then returns the original, the two carbon copies of the thesis, and any others he wishes bound by Ruzicka, to the Dean of the Graduate School, who deposits them in the University Library.

Doctor of Philosophy

The degree of Doctor of Philosophy is offered in the fields of civil, electrical, and mechanical engineering. It is essentially a research degree. The granting of the Ph.D. is based primarily upon the student's knowledge of a specialized field of study and upon the production of an acceptable dissertation embodying the results of original research. Although course work is a necessary part of the student's program, the mere accumulation of course credits will not be sufficient for attaining this degree.

Requirements for the Ph.D. Degree

The formal requirements, discussed in detail below, for the Ph.D. degree are as follows: (1) foreign languages; (2) major and minor courses; (3) supervisory committee for program of study; (4) residence; (5) preliminary examination; (6) dissertation; (7) final examination. In order to be considered for candidacy for the Ph.D. degree, the student must have passed all of his course work in the first year of graduate study; on at least 9 units of course work he must have made a grade of G or better.

Foreign Languages. A reading knowledge of two acceptable foreign languages is required (normally two of the following: French, German, or Russian). A student working toward the doctoral degree should complete the language requirements for that degree at the earliest possible date.

Special courses designed to assist graduate students in acquiring a reading knowledge of French or German are offered for three hours a week, French during the fall semester, German during the spring semester and the Summer Session. A student who registers for either course must reduce his normal load of graduate courses by three units, with no reduction in fees. *No auditors* are permitted in these courses at any time.

Major and Minor Subjects. The student must present acceptable grades for a minimum of 48 units of graduate courses: at least 24 in course work in his major area of concentration in engineering (not necessarily confined to the offerings of the engineering department in which the student is registered); a minimum of 12 units in a minor subject outside of engineering which lends broad support to his program (usually in the mathematical or natural sciences); and the remaining 12 of the 48-unit course requirement in either the major or minor subject, or in an area approved by the major department and by the Dean of the School of Engineering.

Residence. For students who first registered in September, 1959, or thereafter, the minimum registration requirement is 60 units of graduate credit not more than 30 units of which may be accepted by transfer. Since a full program is 30 units per academic year, the prospective Ph.D. candidate who enters with the B.S. degree must plan to spend in residence a minimum of two academic years; if he enters with the M.S. degree, his minimum residence is one academic year. If there are undergraduate deficiencies in his program, he may in addition to the minimum requirements be required to take preliminary undergraduate courses for which he will not receive graduate credit. Even if there are no such undergraduate deficiencies, the student's supervisory committee will determine what requirements, if any, above the minimum the student must meet.

For requirement of registration see Normal Registration, page 53.

Committee to Supervise the Program of Study

The Director of Graduate Studies of the major department will, during the first period of full-time registration of each doctoral aspirant, appoint a program advisory committee consisting of three members of the Graduate faculty in areas relevant to the student's intended major. This committee will guide the student in the initial stages of his program.

Not later than two months before the preliminary examination the Director of Graduate Studies in the major department will nominate for approval of the Dean of the Graduate School of Arts and Sciences a supervisory committee of five, one being designated as chairman. This committee will include at least three members of the major department and one from the minor. This committee will draw up a program of study and administer the preliminary examination and, with such neces-

sary changes as are approved, the final doctoral examination. The final examination may be administered with a minimum of four members.

When the preliminary examination is arranged, the committee and the Director will submit to the Dean of the Graduate School the student's program of study bearing a statement that the Department's course and language requirements have been or are being completed.

Time Limitations

1. At the time that the preliminary examination is passed any courses, language certifications, or other credits for advanced standing which are more than six calendar years old will not be accepted toward fulfilling the minimum requirements of the doctoral degree.

2. The student should normally pass the preliminary examination by the end of his second year of graduate study. If he has not passed it by the middle of the third year, he must file with the Dean of the Graduate School a statement explaining the delay and setting a date for the examination. Except under unusual circumstances, extension will not be granted beyond the end of the third year.

3. The doctoral dissertation should be submitted and accepted within two calendar years after the preliminary examination is passed. Should the dissertation not be submitted and accepted within four years after the examination, the candidate, with the approval of his committee, may petition the Dean of the Graduate School for an extension of one year. Should this extension be granted and the dissertation not be submitted and accepted within the year, the student to remain a candidate for the degree must pass a second preliminary examination. In such a case, the time limit for submitting the dissertation will be determined by the Dean of the Graduate School and the candidate's committee.

Credit for Summer Work

Credit earned in the Summer Session will not reduce the minimum required residence (see above, p. 57).

Preliminary Examination

A student is not accepted as a candidate for the Ph.D. degree until he has passed the preliminary examination. A transfer student who may have passed a preliminary examination elsewhere must nevertheless take the examination in this Graduate School. The examination ordinarily covers both the major and minor fields. The preliminary examination for a student majoring in engineering must contain an oral component of approximately two hours' duration and may, at the discretion of the committee, include a written component.

In the summer, a preliminary examination may be scheduled only between the opening and closing dates of the Summer Session.

Privilege of Re-Examination. Should the student fail the preliminary examination, he may apply, with the consent of his supervisory committee and of the Dean of the Graduate School, for the privilege of a second examination to be taken no sooner than three months after the date of the first. Failure on the second examination will render the student ineligible to continue his program for the Ph.D. degree at Duke University.

The Dissertation

The dissertation is expected to be a mature and competent piece of writing, embodying the results of significant and original research.

Filing Title. Not later than March 1 (March 2 if March 1 falls on Sunday) preceding the June commencement at which the degree is expected to be conferred, the student must file with the Dean of the Graduate School, on the official form to be obtained from the Graduate Office, the title of the dissertation. This title must receive the written approval of both the Director of Graduate Studies of the student's major department and the professor who directs the dissertation.

Form. The basic requirements for preparing the dissertation such as quality of paper, form, and binding are prescribed in the instructions for microfilming (see below) and in the *Manual of Style for Theses and Dissertations,* revised 1961, to be obtained from the Duke University Book Store, West Campus.

Submitting Dissertation. The dissertation must be completed to the satisfaction of the instructor who directs it. Four typewritten copies bound in snap binders secured through the Graduate School Office must be deposited with the Dean of the Graduate School on or before April 15 preceding the June commencement when the degree is to be conferred. The dissertation must be submitted to the Graduate Office at least seven days before the scheduled date of the student's examination.

Publication on Microfilm. All doctoral dissertations will normally be published on microfilm through University Microfilms, Ann Arbor, Michigan. Authors may, if they wish, also copyright them. The abstract will be published in Dissertation Abstracts. Before final typing is completed, the candidate should obtain in the Graduate Office detailed instructions on the procedure and the microfilming agreement.

In brief, all copies of the dissertation, the original in clean type, will remain unbound except for spring binders. Ten copies of an abstract carefully written and not more than 600 words long, are submitted when the dissertation is first presented to the Graduate Office. A nonreturnable dissertation fee of $25 is charged for handling and microfilming. If copyright is desired, an additional fee is charged of $6 plus 2-½ cents per page. The original copy and two carbon copies will be bound by the Ruzicka

Bindery. The fee is $5.00 a volume. The student may request that more than the three copies be so bound.

Final Examination

The final oral examination shall be primarily on the dissertation. Questions may, however, be asked in the candidate's major field. Except in unusual circumstances approved by the Dean a final examination will not be scheduled between the last day of the spring examination period and registration day in the fall semester.

If a student fails his final examination, he may be allowed to take it for a second time, but not sooner than six months from the date of his first. Permission to take the second examination must be obtained from the instructor who directed the dissertation and from the Dean of the Graduate School. Failure to pass the second examination renders the student ineligible to continue work for the Ph.D. degree at Duke University.

Deposit of the Dissertation. After the examination has been passed, the candidate brings to the Graduate Office the original and first two carbon copies of the dissertation, properly signed, and any other copies he wishes bound by Ruzicka. At this time he signs the microfilming agreement and pays such binding and copyright fees as are due.

Graduate Academic Regulations

Grades, Hours, and Credits

Although ideally graduate study is principally individual reading research, and laboratory experimentation under guidance, academic progress in the United States is generally measured and recorded in terms of course hours and credits. The term *residence* designates full-time study and research in close proximity to facilities provided for both as opposed to part-time study incidental to a full-time occupation. Here required residence of one year is defined as two successive academic semesters of not less than nine units registration each semester. Credit for courses and seminars, research, and residence, and corresponding tuition and fees are stated in terms of units. According to conventional measurement one unit is equivalent to one semester hour.

Credits Earned Outside this Graduate School

Graduate Credit Earned before the B.S.E. Degree is Granted. Ordinarily no credit will be allowed for graduate courses earned before a student has been awarded his B.S.E. degree. However, an undergraduate

student at Duke University who, at the beginning of his final semester, lacks no more than 9 semester hours of fulfilling the requirements for the B.S.E. degree, may obtain permission from the Dean of the Graduate School to enroll for graduate courses sufficient to bring his total program to fifteen hours a week. Such graduate courses will be credited toward the M.S. degree, provided that the student meets the requirements for admission to the Graduate School, and that he is duly registered in the Graduate School at the beginning of the final semester.

Under certain circumstances a maximum credit of 6 units may be allowed toward the M.S. degree for graduate courses completed elsewhere. The acceptance of credit up to this amount, however, will not reduce the minimum of required registration at Duke University. (See below.) With the approval of both the student's major department and the Dean of the Graduate School, a student who is granted such transfer credit may be permitted to register for as much as 12 units of thesis research instead of the usual 6 units. Or he may be permitted to fill out his schedule with as much as 6 units of further undergraduate training or 6 units of required language courses on the undergraduate level. In no case will credit be allowed for extension or correspondence courses.

Under appropriate circumstances up to 30 units of graduate credit may be accepted toward the Ph.D. degree for students entering with the M.S. degree from another institution.

Transfer of Graduate Credits. Credit for graduate course work earned at another institution will be determined only after a student has spent one semester at Duke University. After completing his first semester, the student through his Director of Graduate Studies should file a request that his credits be reviewed and a decision be made.

Reciprocal Agreement with the Consolidated University of North Carolina. Under a plan of cooperation between the University of North Carolina and Duke University, students regularly enrolled in the Graduate Schools of the University of North Carolina during the regular academic year, and paying full fees to that institution, may be admitted to a maximum of two courses per semester in the Graduate School of Duke University upon payment of a nominal registration fee of two dollars and of any other special fees regularly required of all students. Under the same arrangements, students in the Graduate School of Duke University may be admitted to course work at the University of North Carolina. A similar arrangement is effective in the Summer Session. (See the *Summer Session Bulletin.*)

Grades

Grades in the Graduate School are as follows: E, G, S, F, and I. E (exceptional) is the highest mark. G (good) and S (satisfactory) are

the remaining passing marks. F (failing) is below passing, and I (incomplete) indicates that some portion of the student's work is lacking, for an acceptable reason, at the time the grades are reported. The instructor who gives an I for a course specifies the date by which the student must have made up the deficiency, in no case more than one calendar year from the date the course ended. If the course is not completed, the grade of F is entered upon the student's record unless his appeal to the Dean for the grade No Credit is approved. The grade of Z indicates satisfactory progress at the end of the first semester of a two-semester course. It will be changed to whatever grade is appropriate upon the completion of the course. A grade of F in a major course normally occasions withdrawal from a degree program not later than the end of the ensuing semester or term; a grade of F in a minor course occasions academic probation.

Courses Primarily for Undergraduates

Students granted provisional admission and others whose preparation is found deficient may on occasion be required as part of their program to take undergraduate courses as prerequisites to continued graduate study. Undergraduate courses thus taken and others elected by the student will carry no graduate credit.

In exceptional cases, 100-level courses *outside the major department* may be taken for graduate credit to a maximum of two one-semester courses or one year-course not exceeding a total of 8 units, when approved by the Directors of Graduate Studies in the major department and in the department in which the course is listed and by the supervisor of the program.

Withdrawal and Interruption of Program

From a Course. For permissible changes during the first thirty days after the registration date, see Change of Registration, page 52. If a course is dropped without the necessary approval, the permanent record will list the course as *Dropped Unofficially, F.* If a course is dropped after the thirty-day period, the status of the student at the time of withdrawal from the course will be determined and be indicated on the permanent record as *Withdrew Passing (WP)* or *Withdrew Failing (WF).*

From the Graduate School. The University reserves the right, and matriculation by the student is a concession of this right, to request the withdrawal of any student whose conduct at any time is not satisfactory to the University, even though no specific charge be made against the student. If a student wishes for any reason to withdraw from the Graduate School, he should notify both the Director of Graduate Studies in his

major department and the Dean of the Graduate School prior to the date of his expected withdrawal. For withdrawal occasioned by academic failure, see above.

Students who find it necessary to interrupt their program of study for a period longer than a summer vacation should, before departure, leave with the Graduate Office a statement of the reason for interruption, mailing address, and expected date of return. If they are subject to registration *in absentia*, they should arrange for such registration before departure.

A foreign student who after successfully completing a minimum of one semester's graduate study must withdraw for the purpose of returning home before the completion of a graduate program may with the approval of his major department request the Dean to issue him a Certificate of Graduate Study.

Transcript

A student who wishes to transfer his credits from Duke University to another institution is entitled to one free transcript of his record. A fee of one dollar, payable in advance, is charged for each additional copy. Requests are directed to the Central Records Office.

Undergraduate Nonacademic Regulations

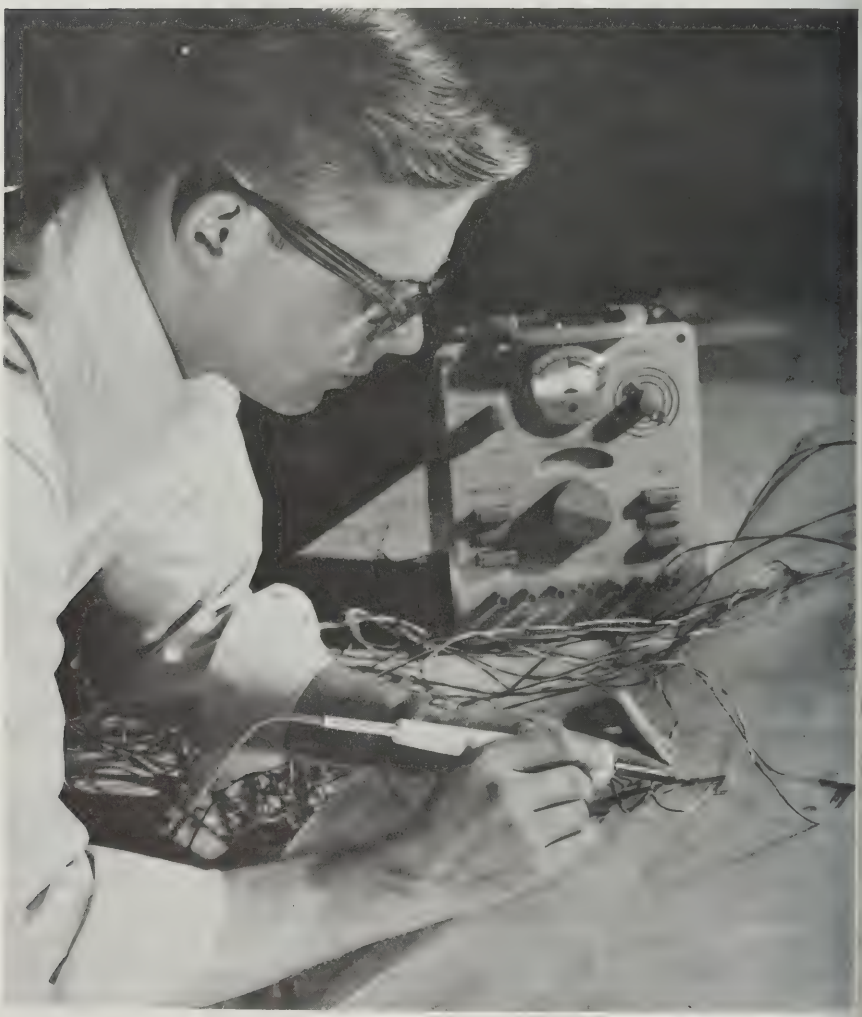
Conduct and Discipline

The University expects of its students loyal and hearty cooperation in developing and maintaining high standards of conduct as well as of scholarship. General University regulations concerning conduct of students are made available to students when admission is offered, or upon request. The student in accepting admission indicates his willingness to subscribe to those regulations. The University reserves the right, and matriculation by the student is a concession of this right, to ask the withdrawal of any student whose conduct at any time is not satisfactory to the University, even though no specific charge may be made against the student.

General oversight of the conduct of students and the administering of discipline are under the supervision of appropriate deans. Immediate supervision is entrusted to the Dean of Men and the Dean of Women. However, through the expressed willingness of the students of the University to assume the responsibility of maintaining high standards of morality, the student body has become to a great degree self-governing. Two councils, one of men and the other of women, each composed of duly elected representatives of the student body, exercise the authority granted

the students by their respective colleges to investigate all cases of misconduct, as well as all other cases of violation of proper standards and traditions, and to make recommendations of penalities based on their finding. They exert a guiding and stimulating influence for the promotion of high ideals of conduct among students.

For more complete information, see *Bulletin of Information and Regulations, Trinity College and the School of Engineering.*



Courses of Instruction

Note. The amount of credit for each course is specified in semester hours following the listing of the course. For a description of each course, consult the *Bulletin of the School of Engineering.*

Undergraduate Engineering Non-Departmental Courses

Dean Meriam; Associate Dean Kraybill

Egr 1. *Engineering Design I.* 2 s.h. Lewis and Linderoth

Egr 2. *Engineering Design II.* Prerequisite: Math 51. 2 s.h. Lewis and Linderoth

Egr 23. *Statics.* Corequisite: Math 22. 3 s.h. Arges, Dvorak, and Nash

Egr 53. *Engineering Design III.* Prerequisite: Math 22. 2 s.h. Macduff and Warner

Egr 63. *Introductory Electric Systems I.* Corequisites: Math 63 and Phys 51. 4 s.h. Meier, Pilkington, Thurstone, and Wells

Egr 73. *Mechanics of Deformable Bodies.* Prerequisite: Egr 23. 3 s.h. Arges, Brown, Dvorak, and Palmer

Egr 83. *Structure and Properties of Solids.* Prerequisite: Chem 2. Corequisites: Math 63 and Egr 73. 3 s.h. Pearsall and Shepard

Egr 101. *Thermodynamics.* Prerequisites: Chem 2 and Phys 52. 3 s.h. Kenyon

Egr 113. *Introductory Electric Systems II.* 3 s.h. George, Joines, Trickey, and Wells

Egr 123. *Dynamics.* Prerequisites: Egr 23, Math 63, and Phys 51. 3 s.h. Arges, Hill, J. F. Wilson, and Wright

Egr 133. *Heat Transfer.* Prerequisite: Math 63. Corequisite: Egr 101. 2 s.h.

Egr 143. *Fluid Mechanics.* Prerequisite: Math 63. Corequisite: Egr 123. 2 s.h. Muga, J. F. Wilson, and others

Egr 163. *Fields.* Prerequisite: Math 111. Corequisites: Egr 113, 123, 133, and 143. 3 s.h. George and Pilkington

Egr 169.* *Legal Aspects of Engineering.* Open to seniors only. 3 s.h. Olive

Egr 170.* *Patent Law for Engineers.* Open to seniors only. 3 s.h. Olive

Civil Engineering

Undergraduate Courses

Associate Professor Hill, *Acting Chairman*; Professor Bryan, *Director of Undergraduate Studies*

CE 96. *Geodetic and Location Measurements.* Prerequisite: Egr 53. 3 s.h.

CE 101. *Soil Mechanics Laboratory.* 1 s.h. (Not offered after 1967-68.) Koerner and Vesić

CE 110.* *Plane Surveying.* Prerequisites: Egr 53 and Math 51. 3 s.h. Arges

CE 116. *Transportation Engineering.* 3 s.h. Cribbins

CE 118. *Materials of Construction.* Prerequisites: Egr 73 and 83. 2 s.h.

CE 121. **Hydrology.* Prerequisite: CE 123. 3 s.h. Bryan

CE 123. *Hydraulic Engineering.* Prerequisite: Egr 143. 3 s.h. Muga

CE 124. *Sanitary Engineering.* Prerequisite: CE 123 or consent of instructor for non-civil-engineering students. 3 s.h. Bryan

CE 126. **Sanitary Engineering Design.* Prerequisite: CE 124. 3 s.h. Bryan

CE 131. *Structural Mechanics I.* Prerequisites: Egr 73 and Math 64. 3 s.h. Brown

CE 132. *Structural Design.* Prerequisite: CE 131. 4 s.h. (Not offered after 1967-68.) Palmer

CE 133. *Structural Design I.* Prerequisite: Egr 73. Concurrent CE 131. 3 s.h. Palmer

CE 134. *Structural Design II.* Prerequisite: CE 131. 3 s.h. Palmer

CE 135. *Introduction to Soil Mechanics.* Prerequisites: Egr 107, 109, and 128. Concurrent: CE 101. 2 s.h. (Not offered after 1967-68.) Vesić

CE 139. *Introduction to Soil Mechanics.* Prerequisites: Egr 73 and 83, and CE 123. 3 s.h.

CE 140. **Structural Mechanics II.* Prerequisite: CE 131. 3 s.h. Brown

CE 143, 144. **Projects in Civil Engineering.* Permission for enrollment should be secured from the Director of Undergraduate Studies, with the

*Offered only upon sufficient demand; enrollment limited.

approval of the student adviser and the professor under whom the project will be undertaken. 1-6 s.h.

CE 146. **Professional Engineering.* Seniors only. 2 s.h. Palmer

CE 148. **Structural Engineering.* Prerequisites: CE 133 and CE 134. 3 s.h. Palmer

CE 150. *Engineering Systems Analysis.* Prerequisite: Senior standing. 2 s.h.

*Graduate Courses**

Associate Professor Hill, *Acting Chairman*; Professor Vesić *Director of Graduate Studies*; Professors Brown, Bryan, Meriam, and McDonald; Associate Professor Kumar; Assistant Professors Dvorak, Muga, and Wilson

CE 201. *Advanced Mechanics of Materials.* 3 units. Hill and McDonald

CE 202. *Experimental Mechanics.* 3 units. Hill

CE 204. *Plates and Shells.* Prerequisite: CE 201 or equivalent. 3 units. Hill

CE 205. *Elasticity.* Prerequisite: CE 201 or equivalent. 3 units. Dvorak

CE 211. *Mechanical Behavior of Materials.* 3 units. Kumar

CE 212. *Structural Materials.* Prerequisite: CE 211. 3 units. Dvorak and Kumar

CE 221. *Incompressible Fluid Flow.* 3 units. Muga

CE 224. *Coastal and Tidal Hydraulics.* 3 units. Muga

CE 231. *Structural Engineering.* 3 units. Brown

CE 232. *Reinforced Concrete Design.* 3 units. Brown

CE 235. *Foundation Engineering.* 3 units. Vesić

CE 236. *Earth Structures.* 3 units. Vesić

CE 243, 244. *Sanitary Engineering Unit Operations and Process Design.* 6 units. Bryan

CE 250. *Engineering Analysis.* 3 units. Wilson

CE 303. *Elastic Stability.* Prerequisite: CE 201. 3 units.

CE 304. *Advanced Plates and Shells.* Prerequisite: CE 204. 3 units. Hill

CE 305. *Advanced Elasticity.* Prerequisites: CE 205, Math 286. 3 units. Dvorak

CE 306. *Plasticity.* Prerequisites: CE 205 and CE 211 or equivalent. 3 units. Wilson

CE 307. *Viscoelasticity.* Prerequisite: CE 205 or equivalent. 3 units. Dvorak

CE 309. *Advanced Structural Dynamics.* Prerequisite: ME 203. 3 units. Wilson

CE 321. *Mechanics of Ideal Fluids.* Prerequisite: Math 286 or equivalent. 3 units. Muga.

*Offered only upon sufficient demand; enrollment limited.

CE 331, 332. *Advanced Structural Design and Analysis.* Prerequisites: CE 231 or equivalent. 6 units. Brown and Hill

CE 335. *Mechanical Behavior of Soils.* 4 units. Vesić

CE 336. *Advanced Soil Mechanics.* Prerequisite: CE 335. 4 units. Vesić

CE 337. *Elements of Soil Dynamics.* Prerequisite: CE 335 or consent of instructor. 3 units. Vesić

CE 365. *Advanced Topics in Civil Engineering.* 1 to 3 units. Members of the Graduate Staff

CE 399. *Special Readings in Civil Engineering.* Prerequisite: approval of the Director of Graduate Studies. 1 to 3 units. Members of the Graduate Staff

Electrical Engineering

Undergraduate Courses

Professor Wilson, *Chairman*; Professor Meier, *Director of Undergraduate Studies*

EE 161. *Electronics and Signals.* Prerequisite: Egr 113. 3 s.h. Beadles and Nolte

EE 162. *Electromechanical Energy Conversion.* Prerequisites: Egr 113, 123, and 163. 2 s.h. Trickey and Wilson

EE 163. *Physical Electronics.* Prerequisites: Egr 163 and Phys 161. Corequisite: EE 164. 3 s.h. Hacker

EE 164. *Electromagnetic Fields and Waves.* Prerequisite: Egr 163. 3 s.h. Kerr

EE 167. *Design Colloquium.* 2 s.h. Meier

EE 173-174. **Projects in Electrical Engineering.* Consent of the Director of Undergraduate Studies required. 1-6 s.h. Staff

EE 185. *Pulse and Digital Electronics.* Prerequisite: EE 161. 3 s.h. George

EE 186. *Modulation Systems and Noise.* Prerequisite: EE 161. 3 s.h. Owen

EE 187. *Electronic Processes in Materials.* Prerequisite: EE 163. 3 s.h. Hacker

EE 188. *Dynamics of Electromechanical Energy Conversion.* Prerequisite: EE 162. 3 s.h. Trickey

EE 195. **Nuclear Engineering Fundamentals.* Prerequisite: permission of instructor. 3 s.h. Meier and Wortman

EE 196. *Microwaves and Quantum Electronics.* Prerequisite: EE 164. 3 s.h. Joines

*Offered only upon sufficient demand; enrollment limited.

EE 199. **Linear Feedback Systems.* Prerequisite: permission of instructor. 3 s.h. Wells

*Graduate Courses**

Professor Wilson, *Chairman*; Associate Professor Kerr, *Director of Graduate Studies*; Professors Artley, Meier, and Owen; Associate Professors Burger (Adjunct), Pilkington, Thurstone, and Wells; Assistant Professors George, Hacker, Joines, and Nolte; Lecturers Patt and Trickey

EE 203. *Random Signals and Noise.* 3 units. (Fall semester.) Kerr

EE 204. *Information Theory and Communication Systems.* Prerequisite EE 203. 3 units. (Spring semesters 1970, 1972.) Nolte

EE 205. *Signal Detection and Extraction Theory.* Prerequisite: EE 203 or permission of instructor. 3 units. (Spring semesters 1969, 1971.) Nolte

EE 206. *Switching and Logic Networks.* Prerequisite: permission of instructor. 3 units. (Spring semesters 1970, 1972.) Patt

EE 211. *Solid State Theory.* Prerequisite: permission of instructor. 3 units. (Fall semester.) Hacker

EE 212. *Solid State Materials.* Prerequisite: EE 211. 3 units. (Spring semesters 1970, 1972.) Hacker

EE 213. *Principles of Magnetism.* Prerequisite: EE 211 or permission of instructor. 3 units. (Spring semesters 1969, 1971.) Hacker

EE 215. *Semiconductor Physics.* Prerequisite: EE 211 or permission of instructor. 3 units. Hacker

EE 217. *Masers.* Prerequisite: permission of instructor. 3 units. (Spring semesters 1969, 1971.) George

EE 222. *Nonlinear Analysis.* Prerequisite: permission of instructor. 3 units. (Fall semester.) Wilson

EE 225. *Semiconductor Electronic Circuits.* Prerequisite: permission of instructor. 3 units. (Spring semester.) Joines

EE 227. *Network Synthesis.* Prerequisite: permission of instructor. 3 units. (Fall semesters 1968, 1970.) George

EE 241. *Linear Control Systems.* Prerequisite: permission of instructor. Credit not given for both EE 199 and EE 241. 3 units. (Fall semester.) Wells

EE 244. *Selected Topics in Control Systems.* Prerequisite: EE 203 and either EE 199 or EE 241. 3 units. (Spring semesters 1970, 1972.) Wells

EE 259. *Advanced Electric Energy Conversion.* Prerequisite: permission of instructor. 3 units. (Offered only upon sufficient demand.) Trickey

EE 265. *Advanced Topics in Electrical Engineering.* Prerequisite: approval of the Director of Graduate Studies and of instructor under whom work will be done. 1 to 3 units. Staff

*Offered only upon sufficient demand; enrollment limited.

EE 271. *Electromagnetic Theory.* Prerequisite: permission of instructor. 3 units. (Fall semester.) Joines

EE 272. *Application of Electromagnetic Theory.* Prerequisite: EE 271. 3 units. (Spring semesters 1970, 1972.) Joines

EE 304. *Advanced Statistical Analysis and System Design.* Prerequisite: EE 203. 3 units. (Spring semesters 1970, 1972.) Kerr

EE 311. *Quantum Theory of Materials.* Prerequisites: EE 211 and Physics 316. 3 units. (Offered only upon sufficient demand.) Pilkington

EE 313. *Magnetic Processes in Materials.* Prerequisite: EE 213, or permission of instructor. 3 units. (Fall semesters 1969, 1971.) Artley

EE 315. *Semiconductor Devices.* Prerequisite: EE 215. 3 units. Hacker

EE321. *Nonlinear Magnetic and Semiconductor Circuits.* Prerequisite: permission of instructor. 3 units. (Spring semesters 1969, 1971.) Wilson

EE 324. *Nonlinear Oscillations in Physical Systems.* Prerequisite: EE 222. 3 units. (Spring semesters 1970, 1972.) Wilson

EE 342. *Introduction to Optimal Control Theory.* Permission of instructor. 3 units. (Spring semesters 1969, 1971.) Kerr

EE 361, 362. *Electrical Engineering Seminar.* No graduate credit, but each graduate student will participate in the seminar for at least two semesters while in residence. (Fall and spring semesters.) Nolte

EE 371. *Advanced Electromagnetic Theory.* Prerequisite: EE 272. 3 units. Artley

EE 373. *Selected Topics in Field Theory.* Prerequisite: EE 272. 3 units. Artley

EE 375. *Interaction of Electron Beams and Waves.* Prerequisite: EE 272. 3 units. (Fall semesters 1969, 1971.) George

EE 399. *Special Readings in Electrical Engineering.* Prerequisite: approval of the Director of Graduate Studies. 1-3 units. Staff

Mechanical Engineering

Undergraduate Courses

Professor Chaddock, *Chairman*; Professor Kenyon, *Director of Undergraduate Studies*

ME 59. *Materials and Processes.* Prerequisite: Chem. 2. 3 s.h. (Not offered after 1967-68.) Pearsall and Shepard

ME 102. *Thermodynamics II.* Prerequisite: Egr 101. 3 s.h. Elsevier

ME 111. *Physical Metallurgy.* Prerequisite: Egr 83. 3 s.h. Shepard

ME 112. *Polymer Science.* Prerequisite: Egr 83. 3 s.h. Pearsall

ME 122. *Transport Phenomena.* Prerequisites: Egr 133, Egr 143, Math 111. 3 s.h. Chaddock

ME 128. **Dynamics of Gases.* Prerequisite: ME 102. Concurrent: ME 106. 3 s.h. Buzzard

ME 133. *Mechanical Design I.* Prerequisite: Math 63. Concurrent: Egr 123. 3 s.h. Nash

ME 134. *Mechanical Design II.* Prerequisite: ME 133. 2 s.h. Linderoth

ME 135. **Vibration Control.* Prerequisites: Math 63 and ME 133. 3 s.h. Macduff

ME 136. *Response of Systems.* Concurrent: Math 111. 3 s.h. Macduff

ME 153. **Heating, Air Conditioning and Refrigeration.* Prerequisites: Egr 133 and 143 and ME 102. 3 s.h. Elsevier

ME 156. *Combustion Engines.* Prerequisite: ME 102. 3 s.h. Elsevier

ME 159-160. *Senior Mechanical Engineering Laboratory.* 2 s.h. (Not offered after 1967-68.) Staff

ME 161. *Mechanical Engineering Laboratory.* Prerequisite: senior standing. 2 s.h. Buzzard

ME 165-166. *Special Topics in Mechanical Engineering.* Prerequisite: permission of the instructor and Director of Undergraduate Studies. 1-3 s.h. Staff

ME 167. **Industrial Engineering.* Prerequisite: senior standing. 3 s.h. Lewis

ME 171. *Response of Physical Systems.* Concurrent: Math 111. 3 s.h. (Not offered after 1967-68.) Macduff

ME 172. **Kinematics of Mechanisms.* Prerequisite: ME 133. 3 s.h. Nash

ME 173-174. *Mechanical Engineering Seminar.* Open to seniors only. 2 s.h. (Not offered after 1967-68.) Elsevier, Kenyon, and Linderoth

ME 177. **Computer Techniques for Simulation and Design.* 3 s.h. Wright

ME 182. **Fundamentals of Nuclear Engineering.* Prerequisite: permission of instructor. 3 s.h. Kenyon

ME 183. **Power Plants.* Prerequisite: ME 102. 3 s.h. Kenyon

ME 197-198. *Projects in Mechanical Engineering.* Prerequisite: 3.0 average and senior standing. 1-6 s.h. Staff

*Graduate Courses**

Professor Chaddock, *Chairman*; Professor Pearsall, *Director of Graduate Studies*; Professors Kenyon, Linderoth, Macduff, and Meriam; Associate Professors Boyle, Clark, Elsevier, Harman, Mixon (Adjunct) and Murray (Adjunct); Assistant Professors Buzzard, Shepard, Werner and Wright

ME 202. *Theoretical Thermodynamics.* 3 units. Elsevier and Harman

ME 203. *Introduction to Advanced Mechanics.* 3 units. Meriam

ME 211. *Theoretical and Applied Polymer Science.* 3 units. Pearsall

ME 221. *Compressible Fluid Flow.* 3 units. Buzzard and Harman

*Offered only upon sufficient demand; enrollment limited.

ME 222. *Heat Transfer.* 3 units. Chaddock and Werner

ME 226. *Intermediate Fluid Mechanics.* Prerequisite: Egr 143. 3 units. Buzzard

ME 231. *Systems Response and Control.* 3 units. Linderoth and Macduff

ME 233. *Fluid Control Systems.* 3 units. Macduff

ME 235. *Advanced Mechanical Vibrations.* 3 units. Macduff

ME 251. *Refrigeration and Cryogenics.* 3 units. Chaddock

ME 255. *Energy Conversion.* 3 units. Elsevier and Harman

ME 265. *Advanced Topics in Mechanical Engineering.* Prerequisites: Approval of the Director of Graduate Studies and the instructor under whom work will be done. 1 to 3 units. Members of the graduate staff

ME 270. *Theory of Lubrication and Bearing Design.* 3 units. Linderoth

ME 280. *Nuclear Reactor Power Cycles.* 3 units. Kenyon

ME 302. *Advanced Thermodynamics.* 3 units. Harman

ME 311. *Behavior of Crystalline Solids.* 3 units. Pearsall

ME 321. *Boundary Layer Theory.* 3 units. Buzzard

ME 323. *Convective Heat Transfer.* Prerequisites: Math 285, ME 222 or equivalent. 3 units. Chaddock

ME 372. *Finite Element Techniques in Design.* 3 units. Macduff

Non-Engineering Subjects in Core Curricula

Chem 1, 2. *General Inorganic Chemistry.* Chemistry 1 is a prerequisite for Chemistry 2. Prerequisite: qualification for Math 21. 8 s.h.

Engl 1-2. *Freshman Composition.* 6 s.h.

Math 21, 22. *Introductory Calculus.* Prerequisite: three units of college preparatory mathematics. Math 21 is prerequisite for Math 22. 6 s.h.

Math 51. *Introduction to Digital Computation.* (A fee of $8.00 is charged for this course.) Prerequisite: three units of college preparatory mathematics 3 s.h.

Math 63. *Intermediate Calculus.* Prerequisite: Math 22. 3 s.h.

Math 111. *Applied Mathematical Analysis I.* Not open to students who have had Math 131. Prerequisite: Math 63. 3 s.h.

Math 112. *Applied Mathematical Analysis II.* Prerequisite: Math 63. 3 s.h.

Phys 51-52. *General Physics.* Not open for credit to students who have completed Physics 1-2 or 41-42. Prerequisites: Mathematics 21, 22 or equivalent (may be taken concurrently). 8 s.h.

Phys 161. *Modern Physics.* Prerequisites: Phys 51-52 and Math 22. Phys 161 is prerequisite for 162. 6 s.h.

For additional non-engineering courses consult the *Bulletin of Undergraduate Instruction.*

Recommended Minor Subjects for Graduate Students

Chem 151, 152. *Organic Chemistry.* Prerequisite: Chem 42 or 61. Chem 151 is prerequisite for 152. 8 units.

Math 221, 222. *Numerical Analysis.* Prerequisite: Math 63 for 221, and 221 for 222. 6 units.

Math 283. *Applied Mathematical Statistics.* Prerequisite: Math 63. 3 units.

Math 284. *Least Squares Analysis of Linear Models.* Prerequisite: Math 136 or 283. 3 units.

Math 285. *Applied Mathematical Methods I.* Prerequisite: Math 63. 3 units.

Math 286. *Applied Mathematical Methods II.* Prerequisite: Math 63. 3 units.

Math 289. *Applications of Stochastic Processes I.* Prerequisite: Math 135 and 140, or consent of instructor. 3 units.

Math 290. *Applications of Stochastic Processes II.* Prerequisite: Math 289 or consent of the instructor. 3 units.

Math 291-292. *Analysis I, II.* Prerequisite: Math 218 or 140, or consent of the instructor. 6 units.

M374. *Cellular Neurophysiology.* 2 units.

M377. *Cellular Transport Processes.* 2 units.

Phys 221,222. *Theoretical Physics.* Prerequisite: Math 285, 286 or equivalent to be taken at least concurrently. 6 units.

Z252. *Comparative Physiology.* Prerequisite: Zoology 151 or equivalent. 4 units.

For additional courses consult the *Bulletin of The Graduate School of Arts and Sciences.*

The School of Forestry

Table of Contents

General Information 1
Courses of Study and Requirements for Degrees 3
Master of Forestry Degree 3
Master of Science Degree 6
Doctor of Forestry Degree 8
Doctor of Philosophy Degree 13
Cooperative Plan of Study with Selected Colleges and Universities 18
Resources for Study 23
General and Research Facilities 23
The Duke Forest 24
Forest Sciences Laboratory 26
Student Life 27
Living Accommodations 27
Services Available 29
Visiting Scholars 30
Admission 31
Financial Information 33
Tuition and Fees 33
Student Aid 35
University Registration and Regulations 38
Courses of Instruction 41

General Information

Duke and the School of Forestry

Duke University, located at Durham, North Carolina, comprises Trinity College, the Woman's College, the School of Engineering, the Graduate School of Arts and Sciences, and the professional schools of Forestry, Divinity, Law, Medicine, and Nursing. The University dates from 1838, when Union Institute was founded in Randolph County by the Methodists and Friends. In 1851 the institution became Normal College, one of the first schools in America for the training of teachers. In 1859 the name was changed to Trinity College and so continued until 1924, when the College became a part of Duke University.

By virtue of an indenture of trust, executed December 11, 1924, by James Buchanan Duke, a great benefaction was placed at the disposal of humanity by providing for hospitalization, church work in rural communities, and education. The principal feature of the educational provision was the creation of Duke University.

The University, with a student body totaling 7,800, occupies two campuses. The Woman's College campus of 108 acres was formerly the campus of Trinity College. About a mile west are the newer units of the University, known as the West Campus, totaling 467 acres. It was first occupied in September, 1930.

Forestry at Duke University began early in 1931 when the Duke Forest was placed under intensive forest management and forestry

research was initiated. An academic-forestry curriculum, designed for men and women intent upon pursuing the study of forestry as a profession, was organized in Trinity College of Duke University in 1932. This program was enlarged in 1952 and now includes more than 60 cooperating colleges and universities. (See pages 18-22).

In 1938 the School of Forestry was organized at the graduate level and a curriculum was offered leading to the degree Master of Forestry. Work leading to the degree of Doctor of Forestry has been offered since 1940. The School has been fully accredited since its origin. A degree in forestry at the undergraduate level is not offered at Duke University.

Graduates of recognized colleges and universities, and professional schools of forestry, and other students who meet the entrance requirements of the School (see page 31), may enroll for training in forestry leading to the professional degrees, Master of Forestry and Doctor of Forestry. The Department of Forestry in the Graduate School of Arts and Sciences also offers graduate work in certain aspects of forestry leading to the degrees Master of Science and Doctor of Philosophy. This work is available to graduates of schools of forestry of recognized standing, and to college or university graduates holding a Bachelor's degree.

Students taking undergraduate work and who are planning to matriculate in the School for programs of study leading to the degrees Master of Forestry or Doctor of Forestry should refer to the section in this announcement (page 31) where entrance requirements are presented.

Courses of Study and Requirements for Degrees

Master of Forestry Degree

The requirements for the degree of Master of Forestry (M.F.) are governed by the extent of the student's previous professional training. Normally, students who have earned the degree of Bachelor of Science in Forestry, or equivalent, from an accredited school of forestry may complete the requirements for the M.F. degree in one academic year. Students who have had no prior professional training in forestry are required to complete five semesters of resident study. Graduate work of equivalent grade done in residence at other institutions may, with the approval of the Faculty, be accepted as credit toward the degree, but a minimum of one year of residence at Duke University is required.

The submission of a thesis for the M.F. degree usually is required. With the approval of the Faculty, an acceptable report on a special study may be submitted in lieu of a thesis, credit for which will not exceed three semester hours. Four copies of the thesis, typewritten and bound in accordance with regulations set forth by the Faculty, must be deposited with the Dean of the School of Forestry on or before May 15 of the academic year in which the student expects to obtain the M.F. degree.

A student who has not completed his thesis while in residence must

submit an acceptable manuscript to the faculty within a period of two years following the termination of his residence.

No student may take less than fourteen nor more than eighteen semester hours of credit per semester without special permission of the Faculty.

Post-Professional Program

Students with satisfactory undergraduate professional training qualify for advanced study and research in the various disciplines of forestry under this program. A specific study plan is developed for each student through consultation with a faculty advisory committee. For the student planning a managerial career in the general area of forest production or in forest products technology (and where the Master of Forestry is planned as a terminal degree), these study plans usually consist of courses and seminars with a major portion of the work concentrated in the areas of the student's interests. For the student with research interest, the study plan is oriented within the subject matter field of interest toward the furtherance of a research career, or toward preparing him for academic training beyond the master's level.

A number of senior-graduate courses offered in other departments of the University (see pages 49-53) are open to qualified students in the School of Forestry. One or more of these may be included in a student's study plan when deemed advisable by his advisory committee.

A minimum of thirty semester credit hours, in which the student must earn a grade of E or G in at least six hours, are required for the degree, Master of Forestry, under this program. Normally, 15 hours of credit (including thesis) must be earned in the School of Forestry.

Post-Liberal Arts and Science Program

Men and women who are college graduates but also have had no prior professional training are admitted to programs of study leading to the attainment of the degree, Master of Forestry. A minimum of five semesters of work in residence is usually required including the core courses listed below.

These courses are normally completed during the first year of residence. However, students lacking prerequisites for specific courses may postpone such courses until the necessary prerequisites have been completed.

Core Courses

	S.H.
Forest-tree Physiology (For. 201)	3
Forest Soils (For. 261)	3
Resource Economics and Policy (For. 269)	3
Identification of American Trees and Their Timbers (For. 249)	4

General Meterology (For. 203)	3
Forest Ecology (For. 243)	3
Computer Science in Forestry (For. 253)	1
Forest Biometry (For. 250)	3
Biology of Forest Insects and Diseases (For. 222)	4
Analytical Techniques in Forest Utilization (For. 210)	3
Careers in Natural Resources (For. 200)	0

During the latter part of the first year each student will be requested to designate the subject matter field (or fields) he wishes to pursue for a major. After the student has designated his field of interest, he will be assigned a faculty adviser who, in consultation with the student, will develop a program of study in a manner similar to that described under the Post-Professional Program (see page 4).

Any student who does not earn a grade of E or G in at least six hours of work in the first academic year will not be permitted to enter into the work of the second year.

Business Management Program

A specialized program is offered in the School of Forestry, in cooperation with the Departments of Economics and Business Administration, to prepare forestry graduates for managerial careers in the business aspects of industrial forest land management or forest products. The program requires two years of study and training leading to the degree Master of Forestry. It is open to selected students who have earned a Bachelor's Degree (or equivalent) in general forestry, forest management, forest utilization, or wood science and technology, with the proper prerequisites, and who have potential leadership qualities indicative of administrative and executive capacity.

The general requirements of the program are as follows:

1. At least 10 courses (30 semester hours) in economics and business administration or in closely allied fields.
2. Approximately five courses (15 semester hours) in forestry which deal with principles of administration and decision-making.
3. Experience as a paid managerial trainee with a cooperating firm for a period embracing the included summer and fall semester of the second year.
4. A written analysis of some phase of the managerial operation of the organization with which the training period is spent.

A specific program of study, commensurate with each student's academic background and future goals, will be developed by the program Advisory Committee in consultation with the student. A sample list of suggested courses included in such a program of study is available on request.

Students entering this program must meet the admission requirements of the School of Forestry and be approved by a committee representing the faculties of Economics and Forestry. The financial award benefits of the School of Forestry are available to applicants for this program (see pages 35-36). Application forms for admission and financial aid may be obtained from the Director of Admissions of the School of Forestry upon request.

Forest Protection Program

A combined program of specialization in entomology-pathology is available for students desiring career preparation in the applied aspects of forest insect and disease control. This program of study leads to the Master of Forestry degree. Students electing the program must hold either a Bachelor's Degree in general forestry or equivalent preparation in the biological sciences.

The general requirements of the program are as follows:

1. A minimum of 28 semester hours in forest entomology and forest pathology. With approval, credits in closely related disciplines may be substituted.
2. At least 12 semester hours of courses and seminars dealing with managerial and statistical aspects of forest protection.
3. One summer of employment experience with a forest protection agency.
4. Organization, conduct, and report of applied research on a forest insect and/or disease problem (4 semester hours).

Reasonable latitude will be permitted in selecting courses to accommodate specific needs and interests. Each program of study will be developed in consultation with the program directors. A list of recommended courses is available on request.

Admission to this program must meet the requirements of the School of Forestry and the approval of the program advisory committee. Application forms for admission and financial aid may be obtained from the Director of Admissions of the School of Forestry.

Master of Science Degree

Prerequisites

The degree Master of Science (M.S.) is offered through the Department of Forestry in the Graduate School of Arts and Sciences. As a prerequisite to this degree a student must have earned a baccalaureate degree from an accredited college or university. There is no foreign language requirement for this degree.

Major and Minor Subjects

The work for the Master of Science degree is designed to provide a basic foundation in a fundamental area of forestry or in a field closely allied with forestry. A minimum of 30 units of credit is required for the degree; 24 units must be in formal courses while not more than 6 units can be earned for the thesis. Specific course requirements call for a minimum of 12 units in a major field of specialization and 6 units in a minor area of concentration. The major and minor fields are determined without regard to departmental divisions of the University if the interdisciplinary nature of the area of specialization makes such a program of study advisable. The specific program of study is developed by the major professor (thesis supervisor) subject to the approval of the Director of Graduate Studies in Forestry and the Dean of the Graduate School.

The Thesis

Filing the Thesis Title. At least one month before presenting the thesis, that is on or *before March 1 for a June degree* or on or *before August 1 for a September degree,* the student must file with the Dean of the Graduate School, on the official form, the title of the thesis and declaration of intention to graduate. The title must have the approval of the Director of Graduate Studies in the major department, and of the thesis supervisor.

Preparing the Thesis. All basic requirements for preparing the thesis are described in the *Manual of Style for Theses and Dissertations,* revised 1961, obtained at the Duke University Book Store, West Campus. The quality of paper, form, and binding are prescribed in the *Manual.*

Submitting the Thesis. Four typewritten copies of the thesis bound in snap binders secured through the Graduate Office must be submitted to the Dean of the Graduate School on or before May 1 for a June degree or August 15 for a September degree and at least three days before the scheduled date of the student's examination. The copies will then be distributed to the several members of the examining committee. Three copies for the Library will be bound by the Ruzicka Bindery, fee $5.00 a volume. The student will state whether or not he wishes more than three so bound.

The Examining Committee and the Examination

The instructor who directs the thesis appoints an examining committee composed of the supervisor of the thesis and two other members of the Graduate Faculty, one of whom must be from a department other than that of the major. If the student has been permitted to take related work within the major department, the third member may represent the minor field within the department. This committee is submitted for approval to the Dean of the Graduate School when the thesis is first presented.

The candidate appears before this committee for an examination which lasts for about one and one-half hours. The subject matter covered in the examination is usually restricted to the thesis and to the major field.

If the candidate passes his examination, the examining committee certifies this fact by signing the title page of all copies of the thesis. The candidate returns the original, the first two carbon copies of the thesis, and any others he wishes bound by Ruzicka, to the Dean of the Graduate School, who deposits them in the University Library.

Doctor of Forestry Degree

The degree Doctor of Forestry (D.F.) is a professional and research degree conferred on those students who have satisfactorily completed specified requirements of advanced study and research.

Work toward the D.F. degree, consisting of advanced studies in a major and a minor field, is offered with majors in the several branches of forestry. A minor may also be elected in forestry or in other areas of specialized study in the University approved by the faculty of the School of Forestry. Prospective students should correspond with the Director of Admissions of the School of Forestry on all matters pertaining to admission to the School.

Program of Study

A committee consisting of at least four members, including a major adviser, will be appointed by the Dean to supervise the work of each student. The major adviser will serve as Committee Chairman.

The advisory committee, in consultation with the student, will prepare a proposed program of study and research. If in the judgment of the Committee the student's prior training is inadequate, he may be required to remedy such deficiencies by taking certain undergraduate courses as prerequisites to continued graduate study, but which will carry no graduate credit.

The program will consist of courses, seminars, arranged work, and research, approved for graduate credit by the faculty of the School of Forestry. Satisfactory completion of a minimum of 30 semester hours of formalized academic work in which the student must attain a grade of E or G in at least nine hours is required of all prospective candidates. Credit hour requirements for the major and minor fields are determined by the Committee. The student's program of study necessarily demands substantial concentration on courses in his major department. A minor, if elected, will consist of at least 12 semester hours, part or all of which may have been included in the program for the Master's degree. If a minor is not elected, a minimum of six semester hours in a single subject matter area outside the major field must be included in the program of study.

Foreign Language Requirements

Because a requirement for a doctoral degree is the mastery of two acceptable foreign languages, the prospective graduate student should attain mastery of at least one of them, and preferably two before applying for admission.

To prevent delay in meeting this requirement, students whose programs call for mastery of French, Spanish, or German and who have studied the language must take the objective screening examination at their first registration period.

Acceptable Languages

The languages normally accepted are French, German, or Russian but a student may substitute for any one of these another language which has a definite relation to the candidate's program of work for the degree and for which an examination can be provided.

Meeting the Requirements

At least one of the language requirements must be met during or before the student's first regularly enrolled semester at Duke. Students not able to comply with this regulation will be required to reduce their maximum allowable load in succeeding semesters by 3 semester hours until the first language requirement has been met. The second requirement must be met before the student is permitted to take his comprehensive preliminary examination. Enrollment in non-credit language courses will be considered a part of the student's maximum allowable load in any one semester.

Language requirements may be met before, during, or after first registration here in the following ways:

Before First Registration

1. *By Transcript.* With the permission of the Dean and of the chairman of his program committee, the doctoral student may file a transcript or other certification as evidence of having passed a comparable examination at another graduate institution. The limitations are that (1) only one of the two doctoral requirements may be met in this way, (2) the other institution offers a doctoral program in the student's major and that the examination would have met a doctoral requirement there, and (3) the examination was passed no more than five years before first registration here.

2. *By ETS Scores.* The Educational Testing Service Graduate School Foreign Language tests in French, German, and Russian are offered at many centers including Duke University Counseling Center upon na-

tionally uniform dates. Scores on these tests taken elsewhere not more than five years before first registration here may be offered to meet the language requirement.

At First Registration

On Monday of the fall registration period and on the day before spring registration, objective reading, grammar, and vocabulary tests in French, German, and Spanish are offered (see the Calendar for hour and place). Any entering student in a doctoral program may take them. On the basis of his scores the student will be (1) certified as meeting requirements in these languages, (2) advised after review to present himself for the ETS tests (French, German) or the locally-prepared reading test in Spanish, or (3) advised to enroll in the special reading course (see below).

After First Registration

1. Students who first registered in September, 1964, and thereafter, and who wish to be examined in French, German, or Russian will take the ETS tests. For Spanish they will take the locally-prepared reading test.
2. Students who began a program before September, 1964, may take either the ETS test or the locally prepared reading tests in French, German, Russian, Spanish, and, upon request, Italian.

Reading examinations in other languages must be individually arranged. Each ETS examination requires a fee of $8. The student who requires a re-examination in the locally prepared reading examination at scheduled times will be charged $5 for each re-examination; if special times are necessary, the fee will be $10. Examinations at special times cannot be offered in French and Spanish.

Special Reading Courses

Special courses designed to assist graduate students in acquiring a reading knowledge of French or German are offered for three hours a week, French during the fall semester, German during the spring semester and the Summer Session. A student who registers for either course must reduce his normal load of graduate courses by three units, with no reduction in fees. *No auditors* are permitted in these courses at any time.

Requirements for Foreign Students

Foreign students whose native language is not English are, during their first registration period, required to take a test for minimum competence in English. Such students, with the approval of the Director of Graduate Studies in their major department, may request substitution of English for

one of the required foreign languages in the doctoral program. If permission is granted, an additional reading test in English will be arranged.

Preliminary Examination

At least six months before the student expects to receive the D.F. degree, and after he has completed most of his formal course work, he will be required to take a preliminary examination. The examination will be written in subject areas specified by the Committee and may be followed by an oral examination given by the Committee. The decision as to whether the examination has been passed or failed is the responsibility of the Committee.

Privilege of Re-Examination. Should the student fail the preliminary examination, he may apply, with the consent of his supervisory committee and of the Dean of the School of Forestry, for the privilege of a second examination to be taken no sooner than three months after the date of the first. Failure on the second examination will render the student ineligible to continue his program for the D.F. degree at Duke University.

Upon satisfactory completion of the preliminary examination the student will be considered a candidate for the D.F. degree.

Residence Requirements

The minimum period of study beyond the M.F. degree, or its equivalent, is two years of academic work of which at least two regular semesters must be spent in full-time study on the campus in Durham. Graduate work of a fragmentary nature taken over a period of several years will not meet this requirement. Course work of equal grade taken at another college or university of approved standing may, with approval of the Faculty of the School of Forestry, be accepted in partial fulfillment, but shall not exceed 15 semester hours of the total requirements. Such transfer of credit may not under any circumstances be used to reduce the two regular semesters of full-time study which must be spent at Duke University. Course work taken under the cooperative interchange-of-registration plan between the graduate schools of Duke University and the Consolidated University of North Carolina is considered the same as work taken on the campus in Durham.

A student who has successfully completed the 30 hours of required formalized study, and met the language requirements, may, before or after passing the preliminary examination, and with the approval of his supervisory committee and the Dean of the School of Forestry, continue his research and complete his dissertation *in absentia*. Under this arrangement he is required to register for one hour of research credit each semester until the degree has been awarded.

A student who remains in residence after passing the preliminary examination must register for a minimum of three semester hours of

research credit each semester unless his course-seminar registration is at least nine hours, in which case the 3-hour registration requirement is waived.

Dissertation

In addition to obtaining adequate training in the field of his specialty, the student must demonstrate his ability to plan and conduct sound, original research. Evidence of this accomplishment must be presented in the form of an acceptable dissertation embodying the results of original work, which is a definite contribution to knowledge. Course credit is not granted but students must register for dissertation research.

The subject of the dissertation must receive the approval of the Faculty, and the title must be filed with the Dean of the School of Forestry on or before October 15 of the academic year in which the candidate desires to take his final examination.

The dissertation will normally be submitted for acceptance within two calendar years after passing the preliminary examination. Should it not be submitted within four calendar years after the examination, the candidate may, with the approval of his committee, petition the Dean of the School of Forestry for an extension of one year.

If the dissertation is not submitted and accepted within five years after the examination, the candidate must pass a second preliminary examination. Following the second examination, the student's doctoral committee will determine possible additional requirements and set time limits within which the dissertation must be completed and accepted.

After the dissertation has been approved by the major adviser, and at least 10 days prior to the date set for the final examination, the candidate is required to deposit with the Dean of the School of Forestry the original and three typewritten and temporarily bound copies together with 10 copies of an abstract of the dissertation consisting of not more than 600 words. Following acceptance of the dissertation by the Committee, the student will deposit with the Dean of the School of Forestry on or before April 15 of the academic year in which the student expects to obtain the D.F. degree the original unbound copy of the dissertation together with three carbon copies (also unbound) and 10 copies of the approved abstract. The first carbon copy will be deposited in the University Library; the major advisor will receive one copy; and the fourth copy will be returned to the student. The original copy will be sent to University Microfilms, Ann Arbor, Michigan, where it will be reproduced and published on microfilms. Later the original will be returned to Duke University where it will be bound and deposited in the University Library.

The basic requirements for preparing the dissertation are described in the *Manual of Style for Theses and Dissertations* which may be obtained from the Duke University Book Store, West Campus. Additional instruc

tions concerning the microfilming and the preparation of title page and abstract should be obtained from the Dean's office.

At the time the final approved copies of the dissertation and the abstract are deposited with the Dean of the School of Forestry, the candidate must show evidence of having paid a fee of $25.00 to the Bursar of the University to cover the costs of microfilming.

Final Examination

The final examination will be in defense of the candidate's dissertation and on related subject matter. It will be oral and will be conducted by the advisory committee. At least six months must elapse between the dates of the preliminary and the final examinations.

Doctor of Philosophy Degree

The Doctor of Philosophy degree (Ph.D.) is conferred through the Graduate School of Arts and Sciences of Duke University. Programs of study and research for men and women working toward the attainment of this degree are directed by faculty members of the School of Forestry who also comprise the graduate faculty of the Department of Forestry in the Graduate School. Both major and minor programs of study are available in the following branches of forestry: forest biochemistry, forest biometry, forest meteorology, forest ecology, forest economics, forest entomology, forest hydrology, forest pathology, forest soils, forest-tree physiology, and wood science including wood anatomy, timber physics, and wood chemistry.

The Ph.D. degree is essentially a research degree. Although course work is a necessary part of the student's program, the mere accumulation of course credits will not be sufficient for attaining this degree. The granting of the Ph.D. is based primarily upon the student's knowledge of a specialized field of study and upon the production of an acceptable dissertation embodying the results of original research.

General Requirements

The formal requirements, discussed in detail below, for the Ph.D. degree are as follows: (1) foreign languages; (2) major and minor courses; (3) supervisory committee for program of study; (4) residence; (5) preliminary examination; (6) dissertation; (7) final examination. In order to be considered for candidacy for the Ph.D. degree, the student must have passed all of his course work in the first year of graduate study; on at least 9 units of course work in the first year he must have a grade of G or better.

Foreign Languages

A reading knowledge of two acceptable foreign languages is required. This requirement must be met before preliminary examinations are taken.

A student working toward the doctoral degree should complete the language requirements for that degree by the end of his first year of residence. If he fails to meet these requirements by the end of his third semester of residence, he must register in the appropriate special reading course or courses (see page 10) until he has satisfied the requirements.

Major or Minor

The student's program of study necessarily demands substantial concentration on courses in his major department. It must, however, include a minimum of six units in a minor subject or related fields approved by his major department. Use of related fields within the major department requires the approval of the Dean of the Graduate School.

Committee to Supervise the Program of Study

As early in a student's course of study as is practicable and *not later than two months before the preliminary examination* the Director of Graduate Studies in the major department will nominate for the approval of the Dean a supervising committee of five, one being designated as chairman. This committee will include at least three members of the major department and one from the minor department if a minor is involved. This committee will draw up a program of study and administer the preliminary examination and, with such necessary changes as are approved, the final doctoral examination. However, should all members of the committee be from the major department, at least one member of another department will be added or substituted for the final doctoral examination. The final examination may be administered with a minimum of four members.

When the preliminary examination is arranged, the committee and the Director will submit to the Dean the student's program of study bearing a statement that the Department's course and language requirements have been or are being completed.

Residence

For students who first registered in September, 1959, or thereafter, the *minimum* registration requirement is 60 units of graduate credit not more than 30 units of which may be accepted by transfer. Since a full program is 30 units per academic year, the prospective Ph.D. candidate who enters with the A.B. or B.S. degree must plan to spend in residence a *minimum* of two academic years; if he enters with the A.M., M.S. or M.F., his

minimum residence is one academic year. If there are undergraduate deficiencies in his program, he may in addition to the minimum requirements be required to take preliminary undergraduate courses for which he will not receive graduate credit. Even if there are no such undergraduate deficiencies, the student's supervisory committee will determine what requirements if any above the minimum the student must meet.

See pages 38-40 for further information on registration in residence and *in absentia*.

Time Limitations. 1) At the time that the preliminary examination is passed any courses, language certifications, or other credits for advanced standing which are more than six calendar years old will not be accepted toward fulfilling the minimum requirements of the doctoral degree.

2) The student should normally pass the preliminary examination by the end of his second year of graduate study. If he has not passed it by the middle of the third year, he must file with the Dean of the Graduate School a statement explaining the delay and setting a date for the examination. Except under unusual circumstances, extension will not be granted beyond the end of the third year.

3) The doctoral dissertation should be submitted and accepted within two calendar years after the preliminary examination is passed. Should the dissertation not be submitted and accepted within four years after the examination, the candidate, with the approval of his committee, may petition the Dean of the Graduate School for an extension of one year. Should this extension be granted and the dissertation not be submitted and accepted within the year, the student to remain a candidate for the degree must pass a second preliminary examination. In such a case, the time limit for submitting the dissertation will be determined by the Dean of the Graduate School and the candidate's committee.

Credit for Summer Work. Credit earned in the Summer Session will not reduce the minimum required residence (see above, p. 14).

Preliminary Examination

A student is not accepted as a candidate for the Ph.D. degree until he has passed the preliminary examination. A transfer student who may have passed a preliminary examination elsewhere must nevertheless take the examination in this Graduate School. The examination ordinarily covers both the major and minor fields.

In the summer, a preliminary examination may be scheduled only between the opening and closing dates of the summer session.

Privilege of Re-Examination. Should the student fail the preliminary examination, he may apply, with the consent of his supervisory committee and of the Dean of the Graduate School, for the privilege of a second

examination to be taken no sooner than three months after the date of the first. Failure on the second examination will render the student ineligible to continue his program for the Ph.D. degree at Duke University.

The Dissertation

The dissertation is expected to be a mature and competent piece of writing, embodying the results of significant and original research.

Filing Title. Not later than March 1 (March 2 if March 1 falls on Sunday) preceding the June commencement at which the degree is expected to be conferred, the student must file with the Dean of the Graduate School, on the official form to be obtained from the Graduate Office, the title of the dissertation. This title must receive the written approval of both the Director of Graduate Studies of the student's major department and the professor who directs the dissertation.

Form. The basic requirements for preparing the dissertation such as quality of paper, form, and binding are prescribed in the instructions for microfilming (see below) and in the *Manual of Style for Theses and Dissertations,* revised 1961, to be obtained from the Duke University Book Store, West Campus.

Submitting Dissertation. The dissertation must be completed to the satisfaction of the instructor who directs it. Four typewritten copies bound in snap binders obtained in the Library must be deposited with the Dean of the Graduate School on or before April 15 preceding the June commencement when the degree is to be conferred. The dissertation must be submitted to the Graduate Office from seven to ten days before the scheduled date of the student's examination.

Publication on Microfilm. All doctoral dissertations will normally be published on microfilm through University Microfilms, Ann Arbor, Michigan. Authors may, if they wish, also copyright them. The abstract will be published in *Dissertation Abstracts.* Before final typing is completed, the candidate should obtain in the Graduate Office detailed instructions on the procedure together with a microfilming agreement which is signed and returned when the dissertation is finally deposited in the Graduate Office.

In brief, all copies of the dissertation, the original in clean type, will remain unbound except for spring binders. Ten copies of an abstract, carefully written and not more than 600 words long, are submitted when the dissertation is first presented to the Graduate Office. A non-returnable dissertation fee of $25 is charged for handling and microfilming. If copyright is desired, an additional fee of $7 plus 2½ cents per page is charged. The original and first two carbon copies will be bound by the Ruzicka Bindery. The fee is $5.00 a volume. The student may request that more than the three copies be so bound.

Final Examination

The final oral examination shall be primarily on the dissertation. Questions may, however, be asked in the candidate's major field. Except in unusual circumstances approved by the Dean a final examination will not be scheduled when school is not in session.

If a student fails his final examination, he may be allowed to take it for a second time, but not sooner than six months from the date of his first. Permission to take the second examination must be obtained from the instructor who directed the dissertation and from the Dean of the Graduate School. Failure to pass the second examination renders the student ineligible to continue work for the Ph.D. degree at Duke University.

Cooperative Plan of Study with Selected Colleges and Universities

Since its inception the Duke School of Forestry has had the cooperation of Trinity College (the men's undergraduate college of arts and sciences of Duke University) in preparing students for professional careers in forestry. Under the plan, a student devotes his first three years to a coordinated and carefully integrated program of study in the basic arts and sciences in Trinity College. The five following semesters are spent in the School of Forestry. Upon the successful completion of this five and one-half year course of study, a student will have earned the Bachelor of Science degree from Trinity College and the professional Master of Forestry degree from the Duke School of Forestry.

Based upon the experience and success of this cooperative program with Trinity College, the School of Forestry in 1952 initiated similar programs of collaboration with a selected group of colleges and universities located throughout the United States. These programs offer students the numerous advantages of a broad background in liberal arts and sciences as preparation for later professional training. A student intent upon following such a course of study should make application to one of the colleges listed on pages 19-22. Admission requirements and other information pertinent to matriculation may be obtained from each of these institutions. Not later than the end of the first semester of the third year in the college

or university of his choice, the student may make formal application for admission to the Duke School of Forestry. To qualify for admission under these programs, a student must have followed a course of study arranged in consultation with his advisor, must have the official recommendation of his college, and must meet the minimum requirements for admission to the Duke School of Forestry.

Institutions Cooperating with the School of Forestry in the Academic-Forestry Program

Alabama

Samford University Birmingham 35209

Colorado

Colorado College Colorado Springs 80903

Florida

Florida Southern College Lakeland 33802
Rollins College Winter Park 32791
Stetson University, College of Liberal Arts DeLand 32720

Georgia

Mercer University Macon 31207

Illinois

Illinois Wesleyan University, College of Liberal Arts Bloomington 61710

Indiana

Butler University, College of Liberal Arts and Sciences Indianapolis 46207
Indiana Central College Indianapolis 46227

Iowa

Iowa Wesleyan College Mount Pleasant 52641

Kansas

Baker University Baldwin 66006

Louisiana

Centenary College of Louisiana Shreveport 71104

Maryland

Western Maryland College Westminster 21158

Michigan

Albion College Albion 49224

Mississippi

Millsaps College Jackson 39210

Missouri

William Jewell College Liberty 64068

Nebraska

Doane College Crete 68333

New Jersey

Drew University, College of Liberal Arts Madison 07940

New York

Hofstra University Hempstead, Long Island 11550

North Carolina

Catawba College Salisbury 28144
Duke University, Trinity College Durham 27706
Guilford College Guilford College 27410
High Point College High Point 27262
Wake Forest College Winston-Salem 27106

Ohio

Baldwin-Wallace College Berea 44017
Denison University, A College of Liberal Arts and Sciences Granville 43023
Heidelberg College Tiffin 44883
Kent State University, College of Liberal Arts Kent 44240
Marietta College Marietta 45750

Miami University, College of Arts and Sciences Oxford 45056
Ohio University Athens 45701
Otterbein College Westerville 43081
Wittenberg College Springfield 45501
Youngstown University Youngstown 44503

Oregon

Reed College Portland 97202
Willamette University, College of Liberal Arts Salem 97301

Pennsylvania

Albright College Reading 19604
Elizabethtown College Elizabethtown 17022
Franklin and Marshall College Lancaster 17603
Gettysburg College Gettysburg 17325
Juniata College Huntingdon 16653
Lebanon Valley College Annville 17003
Lycoming College Williamsport 17704
Moravian College Bethlehem 18018
Muhlenberg College Allentown 18104
Thiel College Greenville 16125

South Carolina

Furman University Greenville 29613
Newberry College Newberry 29108
Wofford College Spartanburg 29301

Tennessee

Carson-Newman College Jefferson City 37760
Chattanooga, University of, College of Liberal Arts Chattanooga 37403
East Tennessee State University Johnson City 37602
Lincoln Memorial University Harrogate 37752
Tennessee Wesleyan College Athens 37303
Tusculum College Greenville 37743

Texas

Baylor University, College of Arts and Sciences Waco 76706

Virginia

Bridgewater College Bridgewater 22812
Randolph-Macon College Ashland 23005
Richmond, University of, Richmond College Richmond 23173
William and Mary, College of Williamsburg 23185

West Virginia

Davis and Elkins College Elkins 26241
Marshall University Huntington 25701
West Virginia Wesleyan College Buckhannon 26201

Wisconsin

Beloit College Beloit 53512

Resources for Study

General and Research Facilities

The School of Forestry is housed in the south wing of the Biological Sciences Building on the West Campus. The programs of the School provide for classroom, laboratory, and field instruction in the fundamental disciplines of forestry and wood science. Specialized training may be elected in forest management, forestry or forest products business management, forest economics, silviculture, silvics, forest entomology, forest biometry, forest pathology, forest biochemistry, mensuration, forest soils, tree physiology, forest hydrology, forest climatology, wood anatomy, timber physics, chemistry of wood, harvesting and processing, and several other areas in forest products technology.

General and research laboratories are provided for routine and original studies in all of the subject matter fields. These laboratories are equipped with instruments and facilities for quantitative evaluation of biological materials and processes. Greenhouses immediately adjacent to the Biological Sciences Building and the nearby Duke Forest offer excellent facilities for biological investigations in controlled and natural environments. An IBM system 360 Model 75 Digital Computer is available for processing research data.

Facilities of allied departments of the University are also available for advanced work in chemistry, economics, genetics, mathematics, plant anatomy, plant ecology, plant pathology, and plant physiology.

West Virginia Pulp and Paper Company has made available to Duke University a field headquarters for work in the forests of the South



Excellent greenhouse facilities are available for study of the biology of forest trees.

Atlantic Coastal Plain. This camp, located 18 miles northwest of Summerville, South Carolina, is used as a base for field instruction in timber harvesting, wood utilization, soils, silviculture, and forest management.

The School periodically sponsors conferences and symposia on industrial forest management and other technical and scientific subjects. These offer the current viewpoints of many outstanding individuals in both forestry and in allied fields.

The University library, with 1,863,000 volumes and 4,000,000 manuscripts, provides exceptional resources and facilities for study and research by undergraduate and graduate students, and by visiting scholars. About 80,000 volumes are added annually, while 164 foreign and domestic newspapers and 9,346 periodicals are received currently. Large collections of microfilms of rare books, newspapers, and periodicals are also available.

The Biology-Forestry library (91,000 volumes), Chemistry library (23,400), and Physics-Mathematics library (32,400) are housed for convenience in the buildings of these departments. The libraries of the Schools of Divinity (132,000), Law (151,000), Medicine (82,000), and of the School of Engineering (38,500) are also shelved in the buildings of these schools, all on the West Campus. The Womens College Library on East Campus includes another 163,000 volumes.

The Duke Forest

The Duke Forest, of approximately 8,500 acres, is particularly well

situated for field work. A five-minute walk from the campus will take one well into many parts of the area, while even the most distant portions can be reached by automobile in about twenty minutes.

Short-term research projects are conducted on the Forest by graduate students in forestry, botany, zoology, and other disciplines. More extensive problems are investigated by the faculty with student assistance, segments of which may be used by students for observation, analysis, and interpretation. Many of these studies serve admirably as instructional material. The Forest provides additional instructional material, as well as demonstrations on an operational scale, of advanced forest practices developed at Duke and elsewhere.

The Forest lies mainly in Durham and Orange Counties near the eastern edge of the Piedmont Plateau. A cross-section of much of the woodlands in the upper coastal plain and lower Piedmont of the Southeast is represented on the Forest with its variety of topography, soil, forest conditions, and patterns of past land use. Elevations range from 280 to 760 feet. The soils are derived from such diverse parent material as metamorphic rock of the Carolina slate formation, granite, Triassic sedimentary rock, and basic intrusives. Nearly one hundred tree species are represented. Some eighteen miles of improved woods roads make all parts of these woodlands readily accessible. It serves as an outdoor laboratory for instruction in forestry and allied fields, and as an experimental forest for research in problems of timber growing and in the sciences basic thereto. It is also used to demonstrate methods of silviculture and forest management applicable to the region.

At few other places in America are there provisions for extensive field study and research in forestry literally at the door of a large university.

Field trips throughout the Southeast permit personal exposure to current trends in intensive forestry.





The Duke Forest is well utilized by students to test theories concerning the tree and its environment. Here a student monitors the uptake of radioisotopes in a plantation.

This natural outdoor laboratory, so conveniently located and representative of the region, is a most valuable supplement to the instructional, laboratory, and library facilities of Duke University.

Forestry Sciences Laboratory

The establishment of the Forestry Sciences Laboratory research facility of the United States Forest Service's Southeastern Forest Experiment Station in the Research Triangle Park near Durham provides an unusual opportunity for complementing the research programs of students in the School of Forestry. Specialized research projects in forest entomology, pathology, and soils are currently under way at the Laboratory. The research staff of the Laboratory is available for consultation, participation in seminars, and service on graduate committees of students in the School of Forestry. Arrangements may also be made for students to conduct certain aspects of their research at the Laboratory.

Student Life

Living Accommodations

Housing

The Graduate Center is available to students of the graduate and professional schools. It contains bedroom facilities for four hundred students, complete with lounges, study rooms, recreational rooms, post office, and dining hall. The rooms are equipped for two persons. Rooms are rented for the academic year, but for no period of less than one semester.

Room reservations are made through the Office of Housing Management only after official acceptance for admission to the University. A $25.00 deposit is required of each applicant before a room reservation is made. The initial room deposit is effective during the student's residence in the University if attendance is continuous in regular academic years. This deposit will be refunded under the following conditions:

1. Within thirty days after the student has been graduated.
2. Upon withdrawal from the University, provided written notice is received by the Office of Housing Management by August 1, for cancellation of a reservation for the fall semester; and not later than January 15, for cancellation of a reservation for the spring semester.
3. When the reasons requiring withdrawal are beyond the student's control.

No refund is made until the occupant has checked out of his room through the Director of Housing Management and has settled all of his accounts with the Treasurer.

A resident student, in order to retain his room for the succeeding academic year, must make application at the Office of Housing Management for confirmation of the reservation in accordance with the plan that is published during the school year.

Any exchange of rooms must be arranged with the Director. Persons exchanging rooms without approval will be subject to charges for both rooms.

The authorities of the University do not assume responsibility for the persons selected as roommates. Each student is urged to select his roommate when the room is reserved.

Beds and mattresses (39″ x 74″), tables, chairs, dressers, mirrors, and window shades are furnished by the University. The student supplies linens, blankets and pillows. Rugs, totaling not more than 54-square-feet, study lamps and curtains are permissible, and if desired, are furnished by the students.

Duke University Apartments are available to married graduate students. For further information on apartments for married students, write to the Office of Housing Management, Duke Station, Durham, North Carolina.

Duke University desires to provide for its students a residential environment conducive to academic achievement, the development of high ideals, and sound character. The institution asks and believes that each student will cooperate in achieving these aims by arranging his personal belongings in an orderly manner, by caring for the buildings and furniture as he would in his own home, and by observing a code based on gentlemanly behavior in an educational environment which demands respect for all residents. Regulations governing the occupancy of rooms will be supplied directly from the Housing Office when room reservations are made. Occupants are expected to abide by these regulations.

Women students will be housed in graduate women's facilities. For further information write to the Office of Housing Management, Duke University, Durham, N. C.

Firearms (including air rifles) may be brought into the residence halls only upon written permission and registration with the Dean of Men of Duke University.

For the cost of housing at Duke, see the chapter on Financial Information.

Dining Service

The dining facilities on the West Campus include two cafeterias with multiple-choice menus, and the Oak Room where full meals and a la carte items are served. The cost for the academic year will approximate $600.00, depending on the tastes of the individual.

In the Graduate Center there is a cafeteria with multiple-choice menus and a Coffee Lounge where sodas and sandwiches are served from 11:30 A.M. to 11:00 P.M. The prices in these dining rooms are the same as those on the West Campus.

Due to the large number of those served in the dining halls, it is not possible to arrange special diets for individual students. Special diets for the sick are served in the infirmary.

Services Available

Medical Care

The complete medical facilities of the Duke University Medical Center are available to all members of the University community. To secure the benefits of the Student Health program, a graduate student during the term or semester in which the illness occurs must (1) in the Summer Session term be registered for at least 1 unit research or 3 units of course work, (2) prior to completing minimum residence requirements be registered for at least 9 units per semester. Students are not covered during vacations and their dependents and members of their family are not covered at any time. Care is provided for men at the Student Health Office in Duke Hospital and for women at the Woman's College Infirmary.

The service provided includes hospitalization in Duke Hospital, when recommended by the Hospital staff, to a limit of thirty days; medical and surgical care under the supervision of a senior physician or surgeon; drugs, X-ray work, and ward nursing. Students pay for board while in the hospital. Excluded from the service are refraction of eyes, treatment of teeth, and of all chronic and pre-existing conditions, and elective surgery.

Graduate students are urged to carry adequate health insurance to supplement Student Health Program services. If students have insurance providing hospitalization, surgical, or medical benefits, the benefit shall be applied to the cost of their medical care. *Foreign students are required to hold this or another acceptable policy.*

Student Activities

Forestry students new to Duke University are reminded that they are welcome to use such recreational facilities as swimming pools, tennis courts, golf course, and to affiliate with choral, instrumental, drama, and religious groups.

Students are encouraged to maintain broad professional contacts by

participation in the activities of the Society of American Foresters, the Forest Products Research Society, the national honorary scientific society of Sigma Xi, and other societies appropriate to their major field of study.

The social and business events of the Forestry Club provide opportunities for many pleasant extracurricular activities. An active organization of the wives of forestry students, the Forestry Dames, offers a regular schedule for social occasions of interest to this group.

The Duke University Counseling Center

Through the counseling center, the University provides a professional counseling service designed to aid students in gaining a better understanding of themselves and the opportunities available to them. Counseling is available in the areas of career planning, educational opportunities, and personal and social adjustment.

The Center maintains files of educational and vocational information related to career planning, graduate educational programs and fellowships, and study aids.

National and University-wide testing programs are administered by the Center. A continuing program of research in the areas of counseling and testing is also carried on by the staff of the Center.

Appointments Office

Duke University maintains an active Appointments Office which has steadily been placing students in teaching, governmental and industrial positions. The services of this office are available without charge to graduate students. Those who are interested in securing employment through the Appointments Office, or those who wish to have available for their own use a complete file containing their academic record and pertinent recommendations, should register in this office.

Visiting Scholars

The libraries and, to the extent practicable, other facilities of Duke University will be made available to faculty members of colleges and universities who wish to spend a period of time on the campus in pursuit of their scholarly interests. No fees will be charged such visitors unless they wish to participate in activities for which a special fee is assessed. Room and board may be arranged for at the regular rates in the dormitories and dining rooms. Dormitory space is usually available during the summer months. Inquiries concerning residence for visiting scholars should be directed to the Dean of the Graduate School of Arts and Sciences.

Admission

Master of Forestry

The admission requirements of the School of Forestry for work toward the Master of Forestry degree presuppose that an applicant is either:

1. A graduate of a professional school of forestry, or
2. A graduate of a college or university of high standing, but without prior professional training in forestry, or
3. A student who has successfully completed three years of approved study at one of the colleges (listed on pages 19-22) cooperating with the School in the academic-forestry training program.

Each applicant must present a certified transcript of his academic record showing the courses he or she has taken, the number of credit hours he or she has earned, and the grades received. Although specific courses are not required for admission, applicants must be aware that many fields within forestry require academic preparation of a specialized nature. Deficiencies, if any, may be satisfied in residence, possibly prolonging the time necessary to complete degree requirements. Students interested in specialized areas of forestry should write the Dean for advice as to specific preparatory courses.

An applicant who is a graduate of a professional school of forestry will present a certified transcript of his or her scholastic record showing the

attainment of a degree. Before registering for the first semester of residence, the students will be required to select the branch or branches of forestry in which they wish to concentrate the major part of their work and to prepare their proposed programs in conference with an appropriate faculty advisory committee. Ordinarily, graduates of a fully accredited school of forestry should be able to meet all requirements for the Master of Forestry degree in one full school year of resident study; others may require a longer period of residence.

Doctor of Forestry

Admission to the School of Forestry for a program of study and research leading to the degree, Doctor of Forestry, is granted to a student who has received the degree, Master of Forestry, or its equivalent.

An applicant must file a formal application for admission together with transcripts of his undergraduate and graduate academic records. In his application he should clearly state the branch of forestry in which he desires to concentrate, and if possible, the specific research.

The Director of Admissions of the School of Forestry, together with the prospective student's major advisor, will determine if the qualifications of the applicant meet entrance requirements.

Master of Science and Doctor of Philosophy

Applications for admission into M.S. and Ph.D. programs in forestry should be submitted to the Director of Admissions, Duke School of Forestry, for transmittal to the office of the Dean of the Graduate School.

A student seeking admission to the Graduate School of Arts and Sciences of Duke University must have received an A.B. or B.S. degree (or the equivalent in the case of foreign students) from an accredited institution. His undergraduate program should be well rounded and of such quality as to give positive evidence of capacity for graduate study.

Financial Information

The following table shows the general fees and charges collected from all students. All fees for each semester are due and payable, unless otherwise specified, at the time of registration and no student is admitted to classes until arrangements have been made with the Bursar of the University for the settlement of fees. After the day of registration no refund of tuition or the general fee will be made except for involuntary withdrawal to enter the armed services.

Tuition and Fees

Tuition, per semester	$725.00
General Fee, per semester	$ 72.50
Spring field seminars	$ 10.00
Absentia Fee, per semester (when applicable)	$ 55.00

Forestry students may obtain admission to all regularly scheduled University athletic contests held on the University grounds during the entire academic year by payment of an athletic fee of $15.00 per year plus any Federal taxes that may be imposed. This fee is payable in the fall semester.

Transcripts

A student is entitled to one free transcript of his academic record. A charge of one dollar is made for each additional copy.

Living Accommodations

Rooms in the Graduate Center are equipped for two persons. The rental charge for a double room is $650.00 for the academic year, or $325.00 for each occupant, or $162.50 per occupant for each semester. Rooms are rented for the academic year, but for no period of less than one semester.

Duke University Apartments are available to married graduate students. The rental rates per month are set at $70.00 for an efficiency apartment, $90.00 for a one-bedroom apartment, and $110.00 for a two bedroom apartment.

Housing for women students in the graduate women's facilities is available at comparable rates.

No refund of room rent will be made except for involuntary withdrawal to enter the armed services. Such refunds will be made in accordance with the University's established schedules.

Motor Vehicles

Each student possessing or maintaining a motor vehicle at Duke University shall register it annually at the beginning of the fall semester. If a student acquires a motor vehicle and maintains it at Duke University after enrollment, he must immediately register it. At the time of registration of a motor vehicle the following documents must be presented:

(a) State vehicle registration certificate.

(b) Valid driver's license.

(c) Satisfactory evidence of automobile liability insurance coverage with limits of at least $10,000 per person and $20,000 per accident for personal injuries, and $5,000 for property damage, as required by the North Carolina Motor Vehicle Law.

(d) If the student is under 21, a statement signed by the student's parent or guardian granting the student permission to operate a motor vehicle at Duke University.

There is a registration fee of thirty dollars per year for each automobile operated on the campus by students who live on the campus. There is a similar fee of ten dollars for the registration of two-wheeled motor vehicles.

Estimated Expenses for an Academic Year

The following table represents an estimate of a graduate student's basic expenses in the School of Forestry for one year. It should be noted, how-

ever, that this estimate does not include any allowance for travel, clothing, and other miscellaneous expenses inasmuch as these costs will vary depending on the needs, habits, and tastes of the individual.

	Low	*Moderate*	*Liberal*
Tuition	$1,450.00	$1,450.00	$1,450.00
General Fees	145.00	145.00	145.00
Room-rent*	325.00	325.00	420.00
Board	500.00	550.00	600.00
Laundry	30.00	40.00	50.00
Books	50.00	65.00	100.00
Athletic Fee (optional)	15.00	15.00	15.00
Spring field seminars	10.00	10.00	10.00
	$2,525.00	$2,600.00	$2,790.00

*In the Graduate Center.

Student Aid

Fellowships, Scholarships, and Assistantships

A number of fellowships, scholarships, and assistantships are allocated to the School of Forestry for the encouragement and financial assistance of men and women who offer promise of becoming leaders in the forestry profession. These are awarded to applicants of high character on the basis of scholastic ability as judged by previous educational performance, professional experience, personal references and the Graduate Record Examination.

Holders of the awards will pay tuition and such additional fees as are regularly required.

The awards are of three classes:

Fellowships

From five to eight fellowships, with stipends ranging from $2,000-$3,600 per academic year. Each recipient must have previously completed work equivalent to that required at Duke University for a Master's degree with a major in forestry or in a discipline basic to forestry. He will devote his time to an approved program of study and research in any of the branches of forestry. He is expected to become a candidate for the degree of Doctor of Forestry or Doctor of Philosophy.

Scholarships

From fifteen to eighteen scholarships with stipends ranging from $1400-$2500 per academic year. Each recipient will normally devote his time

to an approved program of study leading to the degree of Master of Forestry, or Master of Science with a major in forestry.

Graduate Assistantships

One to several graduate assistantships with variable stipends up to $4000, depending upon available funds and upon whether granted for the academic year only, or the academic year plus the summer. Each recipient will devote half-time to research or other work of the School of Forestry. He will be permitted to enroll for not more than 20 semester hours in an academic year in an approved program of study, or study and research, leading to a degree of Master of Forestry, Master of Science, Doctor of Forestry, or Doctor of Philosophy.

Application for Awards

Any student admitted to the School of Forestry is eligible to apply for a fellowship, a scholarship or an assistantship. Application for these awards may be made concurrently with the application for admission.

The general procedures and requirements for applying for any financial award in the School of Forestry are outlined below. Applicants should initiate the necessary action early to insure that the required documents are filed with the Dean of the School of Forestry on or before March 1 prior to enrollment.

1. File award application. Form will be supplied by the School of Forestry on request.
2. Furnish supporting documents as follows:
   a. Official transcripts of record of all previous college or university credits earned.
   b. Letters of reference from at least three persons familiar with the applicant's character, scholarship, and professional ability.

   (Documents offered in support of admission, if so designated, may also serve in support of the application for financial award.)
3. Complete the Aptitude Test of the Graduate Record Examination. Instructions and application for admission to this locally administered examination are available on most college campuses, from the Duke School of Forestry, or by writing the Educational Testing Service, Princeton, New Jersey. Applicants should plan to take this examination in January or earlier.

Notification of awards is made on April 1. In case vacancies occur, completed applications received after March 1 will be considered at a later date.

In every instance where a graduate assistantship, scholarship, or fellowship for the next academic year is offered to an actual or prospective grad-

uate student and accepted before April 15, the accepter may resign his appointment without prejudice prior to that date by notification in writing to the Dean. However, an acceptance given or left in force after April 15 obligates him not to accept another appointment without first obtaining formal release from the Dean of the School.

Loans

Students who are enrolled as full-time degree candidates and who have satisfactory academic and citizenship records are eligible to apply for student loans.

Loans from university funds generally mature after borrowers have left the University. Interest accrues on long-term loans from University funds at the rate of one percent per annum from the date of each note. After a student has left the University permanently, the loans begin accruing interest at the rate of three percent per annum for a period of five years. Interest accrues at the rate of six percent after the three percent ceases to be effective.

In addition to local loan funds, Duke University participates in the student loan program established under the provisions of the National Defense Education Act of 1958. Repayment of these loan funds normally begins one year after the student terminates full-time study. Interest accrues at the rate of three percent per annum commencing one year after termination of full-time study. Upon completion of the period of grace of 12 consecutive months, the ten-year annual repayment period begins, and simple interest on the loan at the rate of three percent starts to accrue. At this point the borrower still has one additional year before his first annual payment becomes due. The first annual installment will therefore fall due 24 months after the borrower has ceased being a full-time student in an institution of higher learning.

Special benefits to those teaching in non-profit schools, colleges, and universities permit a portion of the loan to be cancelled depending upon the length of teaching service.

Complete details regarding the student loan program may be obtained by writing to the Student Loan Division of Duke University. In approving loan applications, the Student Loan Committee selects those students who, from the standpoint of character, scholastic attainment, personality and degree of financial need, are deserving of this consideration. All applications for loans should be made before July 1 preceding the academic year in which the student plans to matriculate.

All applications for loans should be made to the Student Loan Division, Allen Building, Duke University, Durham, N. C. 27706.

University Registration and Regulations

Registration

All students who enter course work or residence for credit; all students who have completed minimum requirements for an advanced degree, but continue to use the facilities of the University in their research; all students in *in absentia* status; and all students who wish merely to audit a course or courses must register.

After the applicant has received notification of his admission to the School of Forestry and has returned his statement of acceptance of admission, he may present himself for registration. During the registration periods, announced in the *Bulletin*, he first confers with an assigned faculty adviser who prepares and signs a course card, listing the course work to be taken during the semester. The student then presents this course card to registration officials, who enroll him officially in his courses. After his first registration period as a current student he will pre-register at the stated times for pre-registration. Failure to pre-register incurs the penalty for late registration. *Former students* who intend to register to resume a degree program must give the Director of Admissions notice of this intention two months before registration.

Late Registration

All students are expected to register or pre-register at the times stated in the *Bulletin*. Those registering late, including those who are obliged to register *in absentia*, are subject to a *late registration fee of* $5.00.

Change of Registration

During the academic year within a period of *fourteen days* from the registration date students may change registration with the approval of his adviser, if no reduction of fee is involved, and with the approval of the Dean if reduction of fee is involved. Thereafter during the first thirty days from the registration date the only permissible change is dropping course-seminar registration and adding equivalent units of research, with the approval of his advisor, the instructor of the course, and the Dean.

Normal Registration

A graduate student is designated as fully registered when he registers for the maximum credit his program requires. Required registration is set in consideration of the student's obligation to teach or assist and the stage he has reached in completion of degree requirements. In the *academic year* normal registration for the resident student who does not hold an appointment as part-time instructor or assistant or does not engage in part-time work is 15 units a semester or 30 units an academic year. The normal registration for the student who holds such an appointment or undertakes such work is either 12 units or a minimum of 9 depending upon the number of hours a week he is required to devote to such duties.

The resident student in a terminal master's program which requires no thesis carries normal registration until he has met all degree requirements. If a thesis is required and the student has met all requirements except for submitting his thesis, he registers for 3 units a semester while in residence or, if he elects to go out of residence, for 1 unit *in absentia* each semester until the thesis is accepted.

The resident student engaged in a master's program which is not terminal but preparatory to a doctoral program registers as though he were a doctoral student.

The resident student in a doctoral program carries normal registration through the semester in which he passes the preliminary examination. If he remains in residence, he continues to register for a minimum of 3 units a semester until the dissertation is accepted. If, before or after passing the preliminary examination, he elects to go out of residence, he registers for 1 unit a semester *in absentia* in order to keep his program active.

It is necessary to be a fully registered student according to the regulations listed above (except when registered *in absentia*) in order to establish eligibility for library carrel and laboratory space, for student housing, for University and some outside loans, for Student Health service

including the voluntary Walker plan coverage, and for reporting status for military duty.

The registration of 1 unit a semester *in absentia* provides occasional consultation with the thesis or dissertation supervisor. It may be waived for military duty or serious problems of health.

In the *Summer Session* 6 units a term is maximum registration. Students resident in the academic year who wish to continue study and use of University facilities including Summer Session Student Health during the summer must register for 1 unit in the first Summer Session term. This registration provides use of these facilities for both terms.

Transfer of Graduate Credits

Credit for graduate course work earned at another institution will be determined only after a student has spent one semester at Duke University. After completing his first semester, the student through his Director of Graduate Studies should file a request that his credits be reviewed and a decision be made.

Reciprocal Agreement with the Consolidated University of North Carolina

Under a plan of co-operation between the University of North Carolina and Duke University, students regularly enrolled in the Graduate Schools of the University of North Carolina during the regular academic year, and paying full fees to that institution, may be admitted to a maximum of two courses per semester in the Graduate School of Duke University upon payment of a nominal registration fee of two dollars and of any other special fees regularly required of all students. Under the same arrangements, students in Forestry and the Graduate Schools of Duke University may be admitted to course work at the University of North Carolina. A similar arrangement is effective in the Summer Sessions. (See the *Summer Session Bulletin.*)

Grades

Grades in the School of Forestry are as follows: *E* (exceptional); *G* (good); *S* (satisfactory); *F* (failing); and *I* (incomplete).

An *I* (incomplete) indicates that some portion of the student's work is lacking, *for an acceptable reason*, at the time grades are reported. The instructor who gives an *I* for a course specifies the date at which the student must have made up the deficiency, in no case more than one calendar year from the date the course ended. If the course is not completed, the grade of *F* is entered upon the student's record unless his appeal to the Dean for the grade *No Credit* is approved.

A grade of *F* in any course normally occasions withdrawal from a degree program.

Courses of Instruction

Note. The amount of credit for each course is specified in semester hours following the listing of the course. For a description of each course, consult the *Bulletin of the School of Forestry.*

School of Forestry Courses

Courses for Seniors and Graduates

200. *Careers in Natural Resources.* Required of students in Academic-Forestry program. No credit. Staff

201. *Forest-Tree Physiology.* Prerequisites: Biology 1-2 or equivalent; one year of chemistry. 3 s.h. Hellmers

203. *General Meteorology.* Prerequisites: one year calculus and college physics or consent of instructor. 3 s.h. Knoerr

210. *Analytical Techniques in Forest Utilization.* 3 s.h. Yandle

218. *Harvesting and Forest Products Field Seminar.* 1 s.h. White

222. *Biology of Forest Insects and Diseases.* 4 s.h. Anderson and Stambaugh

223. *Forest Pathology.* 3 s.h. Stambaugh

230. *Forest Entomology.* 3 s.h. Anderson

232. *Forest Products Entomology.* Prerequisite: Forestry 230 or equivalent. 2 s.h. Anderson

243. *Forest Ecology.* Desirable prerequisites: plant physiology, plant ecology, and Forestry 261, or equivalents. 3 s.h. Woods

244. *Theory and Practice of Silviculture.* Prerequisite: Forestry 243 or equivalent. 3 s.h. White

247. *Biological Nucleonics.* Prerequisites: consent of instructors; one year each of college biology, chemistry, and physics. 3 s.h. Woods and Fluke

248. *Forest Regeneration.* 3 s.h. Woods

249. *Identification of American Trees and Their Timbers.* 4 s.h. Harrar and White

250. *Forest Biometry.* 3 s.h. Yandle

251. *Sampling Methods in Forestry.* Prerequisites: Mathematics 133, Forestry 250 or equivalent. 3 s.h. Yandle

253. *Computer Science in Forestry.* 1 s.h. Braaten

256. *Forest Measurements.* 4 s.h. White

257. *Design of Forestry Experiments and Analysis of Data.* 3 s.h. Braaten

258. *Operations Research.* 3 s.h. Braaten

261. *Forest Soils.* 3 s.h. Ralston

269. *Resource Economics and Policy.* 3 s.h. Yoho

270. *Economics of Forestry.* 3 s.h. Yoho

272. *Marketing Forest Products.* Prerequisites: Forestry 210 and 270 or equivalents. 2 s.h. Staff

276. *Forest Policy.* Prerequisite: Forestry 270. 2 s.h. Yoho

281. *Forest Management.* 3 s.h. Chaiken

283. *Fire Behavior and Use.* 2 s.h. Chaiken

285. *Forest-Game Management.* 2 s.h. Anderson

286. *Forest-Range Management.* 2 s.h. Anderson

289. *Interpretation of Aerial Photographs.* Corequisite: Forestry 281 or equivalent. 3 s.h. Chaiken

290. *Wood Anatomy.* Prerequisite: Forestry 249 or equivalent. 3 s.h. Harrar

292. *Microtechnique of Woody Tissue.* Prerequisites: Forestry 249 and 290 or equivalents. 3 s.h. Harrar

294. *Wood Seasoning and Preservation.* Prerequisite: consent of instructor. 3 s.h. Sullivan

295. *Surface Generation in Wood.* Prerequisite: consent of instructor. 2 s.h. Sullivan

296. *Chemistry of Wood.* Prerequisite: consent of instructor. 3 s.h. Sullivan

297. *Wood Physics (Mechanics).* Prerequisite: consent of instructor. 3 s.h. Sullivan

299. *Special Studies in Forestry.* Credit and hours to be arranged. Staff

For Graduates

301. (fall), 302 (spring). *Advanced Studies in Forestry.* Credits to be

arranged. To meet individual needs of graduate students in the following branches of forestry: (1) *Forest Ecology*; (2) *Forest Soils*; (3) *Silviculture*; (4) *Forest Management*; (5) *Forest Economics*; (6) *Properties of Wood*; (7) *Forest Mensuration and Biometry*; (8) *Forest Entomology*; (9) *Forest Operations Research*; (10) *Dendrology*; (11) *Forest-Tree Physiology*; (12) *Forest Pathology*; (13) *Forest Meteorology and Hydrology*; (14) *Forest Biochemistry*. Consult the *Bulletin of the School of Forestry* for a listing of prerequisites and staff for each branch of study.

304. *Atmospheric Turbulence and Diffusion.* Prerequisites: Forestry 203 and differential equations or consent of instructor. 3 s.h. Vukovich and Kindle

305. *Forest Tree Biochemistry.* Prerequisites: Forestry 201 and a course in biochemistry. 3 s.h. Barnes

306. *Dynamics of Local Atmospheric Motion.* Prerequisites: Forestry 203 and differential equations, or consent of instructor. 3 s.h. Vukovich and Kindle (Not 1968-1969)

308. *Topics in Biometeorology.* Prerequisites: Forestry 203 or equivalent and consent of instructor. 3 s.h. Barnes and Knoerr (Not 1968-1969)

309, 310. *Environmental Science Seminar.* Prerequisite: consent of instructor. 2 s.h. Ralston and Knoerr

312. *Cost and Quality Controls in Forest Utilization.* Prerequisites: Forestry 210 and 270 or equivalents. 3 s.h. Yandle

321. *Phytopathological Technique in Forestry.* Prerequisite: Forestry 223 or equivalent. 4 s.h. Stambaugh

322. *Microbiology of Forest Soils.* Prerequisites: Forestry 223; mycology or bacteriology recommended. 3 s.h. Stambaugh

331. *Toxicology of Insecticides.* Prerequisite: one course in entomology; organic chemistry recommended. 3 s.h. Anderson

332. *Ecology of Forest Insects.* Prerequisite: Forestry 230 or equivalent. 3 s.h. Anderson

333. *Morphology and Taxonomy of Forest Insects.* Prerequisite: Forestry 230 or equivalent. 3 s.h. Anderson

342. *Forest Hydrology.* Prerequisite: one year of college physics; calculus desirable. 3 s.h. Knoerr

344. *Micrometeorology.* Prerequisites: Forestry 203 or consent of instructor. 3 s.h. Knoerr

347, 348. *Forest Ecology Seminar.* Prerequisite: Forestry 243 or equivalent. 2 s.h. Woods

352. *Analysis of Forest Measurements.* Prerequisites: Forestry 250 or Mathematics 133 or equivalents. 3 s.h. Braaten

353. *Sampling and Experimental Design in Forestry.* Prerequisites: Forestry 250 or Mathematics 133 or equivalent. 3 s.h. Osborne, Yandle, and Braaten (Not 1968-1969)

357, 358. *Research in Forestry.* Credits to be arranged. Staff

362. *Forest Soil Physics.* Prerequisite: Forestry 261. 3 s.h. Offered in alternate years with Forestry 366. Ralston (Not 1968-1969)

364. *Soil Classification and Mapping.* Prerequisite: Forestry 261. 3 s.h. Ralston

366. *Forest Soil Fertility.* Prerequisite: Forestry 261; analytical chemistry recommended. 3 s.h. Ralston

368. *Field Seminars.* Credits to be arranged. Staff

378. *Seminar in Forest Economics.* Prerequisites: Forestry 270 and 379 or consent of the instructor; advanced courses in economics and economic theory are desirable. 2 s.h. Yoho

379. *Economic Analysis in Forestry.* Prerequisite: Forestry 270 or consent of instructor. 3 s.h. Yoho

382. *Legal Aspects of Forestry.* 1 s.h. Chaiken

385. *Seminar in Forest Protection.* Prerequisites: Forestry 223, 230, and 283. 1 s.h. Anderson, Chaiken and Stambaugh

386. *Seminar in Forest Management.* Prerequisites: Forestry 244, 281, and 379 or equivalent. 1 s.h. Chaiken

390. *Wood-Liquid Surface Interactions.* Prerequisite: Forestry 296. 3 s.h. Sullivan

392. *Advanced Wood Physics.* Prerequisites: Forestry 297, Forestry 296, Experimental Design. 3 s.h. Sullivan

398. *Timbers of the World.* Prerequisite: Forestry 290 or equivalent. 2 s.h. Harrar

399. *Seminar in Wood Science and Forest Products.* 1 s.h. Harrar and Sullivan

Other Related Courses

A student in the School of Forestry, may, with the approval of the faculty of the School of Forestry and the Director of Graduate studies of the department concerned, take any courses offered in the Graduate School of Arts and Sciences for which he has had adequate preparation. The student is referred to the *Bulletin of the Graduate School of Arts and Sciences* for the complete descriptive content of each course.

A partial list of acceptable courses is given below with semester hours in parenthesis.

Biochemistry and Nutrition: 201, Introductory Biochemistry (4); 203, Chemistry of Natural Products (2); 206, Laboratory Methods in Biochemistry (2); 301, Energy Metabolism (3); 302, Nitrogen Metabolism (2); 304, Proteins and Enzymes (4).

Botany: 202, Genetics (4); 203, Plant Cytology (4); 205, Anatomy (4); 221, Mycology (4); 240, Plant Evolution (3); 252, Plant Metabolism (4); 254, Plant-Water Relations (3) 255, Plant Systematics (4); 256, Com-

munity Analysis and Classification (3); 257, Principles of Plant Distribution (3); 258, Physiology of Growth and Development (4); 259, The Environment (3); 305, Vegetation of North America (3).

Business Administration: 275-276, Advanced Industrial Accounting and Management (6); 279, Budgeting and Control (3); 291, Business Policy (3); 295-296, Advanced Accounting Seminar—Theory and Practice (6).

Chemistry: 206, Elements of Theoretical Chemistry (4); 215, Advanced Inorganic Chemistry (3); 216, Nuclear Chemistry (2); 234, Chemical Instrumentation (2); 251, Qualitative Organic Analysis (2 or 3); 252, Advanced Organic Preparation (2); 303, Thermodynamics (3); 304, Physical Chemistry of Reactions (3); 342, Advanced Organic Chemistry (2); 350, Organic Reactions (2); 352, Mechanisms of Organic Reactions (1); 360, Polymer Chemistry (2).

Civil Engineering: CE 201, Advanced Mechanics and Materials (3); CE 202, Experimental Stress Analysis (3); CE 231, Structural Engineering (3).

Economics and Business Administration: 201, Senior Seminar in Economics (3); 204, Advanced Money and Banking (3); 218, Business Cycles (3); 219, Economic Problems of Underdeveloped Areas (3); 231, Economic History of Europe (3); 233, State and Local Finance (3); 237-238, Statistical Methods (6); 243-244, Econometrics I and II (6); 257, Dynamics of the Labor Movement (3); 262, Trade Unionism and Collective Bargaining (3); 268, Competition and Monopoly (3); 287, Public Finance (3); 293, Economic Systems (3); 294, Economic Functions of the State (3); 301, Economic Analysis (3); 303, Theory of Economic Decision Making (3); 304-305, Seminar—Money and Banking (6); 307-308, Quantitative Analysis (6); 311-312, History of Political Economy (6); 313-314, Seminar—Economic Theory (6); 315, Seminar—Economic Systems (3); 316, Seminar—Economic Functions of the State (3); 317, Seminar—Demographic, Population, and Resource Problems (3); 319, Seminar—Theory and the Problems of Economic Growth and Change (3) 320, Seminar—Trade Cycles, Employment, and Income Theory (3); 321, Theory of Quantitative Economic Policy (3); 329, Federal Finance (3); 330, Seminar—Public Finance (3); 331, Seminar—Economic History (3); 340, National Income (3); 355, Seminar—Labor Economics (3); 358, Seminar—Labor Market and Related Analysis (3); 365, Seminar—International Economics (3); 366, Seminar—Problems in International Trade and Finance (3); 386, Seminar—Latin American Economic Problems (3); 388, Seminar—Industrial Organization (3); 389, Seminar—Industrial and Governmental Problems (3).

Electrical Engineering: EE 201, Energy Systems (3).

Mathematics: 221, Digital Computer (3); 222, Introduction to Numerical Analysis (3); 233, Statistical Methods (3); 234, Sampling Designs (3); 244, Design of Experiments (3); 262, Non-Parametric Statistics (3); 275, Probability (3); 283, Probability for Engineers (3); 284, Linear

Models (3); 285, Applied Mathematical Methods I (3); 286, Applied Mathematical Methods II (3); 289-90, Applications of Stochastic Processes (6); 291-292, Theory of Functions (6).

Mechanical Engineering: ME 202, Theoretical Thermodynamics (3); ME 203, Introduction to Advanced Mechanics (3); ME 221, Compressible Fluid Flow (3); ME 222, Heat Transfer (3); ME 302, Advanced Thermodynamics (3); ME 321, Boundary Layer Theory (3); ME 323, Convective Heat Transfer (3).

Philosophy: 241, Logic (3).

Physics: 201-202, Mechanics (6); 213-214, Contemporary Physics (6); 217-218, Advanced Physics Laboratory (2-6); 303-304, Thermodynamics and Statistical Mechanics (6).

Political Science: 207, American Constitutional Law and Theory (3); 241, Administrative Management (3).

Zoology: 203, Ecology (4); 222, Entomology (4); 238, Systematic Zoology (4); 245, Radiation Biology (3 or 4); 246, Molecular Biology (3 or 4); 271, Cellular Physiology (4); 274, Invertebrate Zoology (4); 276, Protozoology (4); 278, Invertebrate embryology (4).

Graduate School of Arts and Sciences

Table of Contents

General Information 1

Courses of Study and Requirements for Degrees 4
- The Master's Degrees 4
- The Doctor's Degrees 12

Special and Cooperative Programs 18
- Program in Comparative Studies on Southern Asia 18
- Hispanic Studies Program 19
- Population Studies Program 19
- Center for Southern Studies 20
- Oak Ridge Institute of Nuclear Studies 20
- Biomedical Engineering Program 21
- Commonwealth-Studies Center 21
- Cooperative Program with the University of North Carolina 21
- Cooperative Programs in Teacher Education 23

Resources for Graduate Study 25
- The Libraries 25
- Science Laboratories 27

Student Life 34
- Living Accommodations 34
- Services Available 36
- Research and Publications 37
- Visiting Scholars 38

Admission 39
- Prerequisites 39
- Procedures 40

Financial Information 43
- Tuition and Fees 43
- Housing 45
- Motor Vehicles 46
- Student Aid 47

University Registration and Regulations 53
- Registration 53
- Academic Regulations 54
- Language Requirements 58

Courses of Instruction 61

General Information

The Duke University Graduate School

In surveying the progress made in the first seven years after the founding of Duke University, its first President, William Preston Few, wrote that he wanted "to see the Graduate School made strong because it will best and most quickly insure our attaining and maintaining a place of real leadership in the educational world." President Few believed that "more than anything else here our Graduate School will determine the sort of University we are to build and its standing in the educational world." These opinions have continued to prevail to the present day, with emphasis upon the interdependence of teaching and research as the necessary components of scholarship.

Four hundred members of the graduate faculty in 32 disciplines teach the approximately five hundred courses and seminars offered in the Duke University Graduate School, and supervise thesis and dissertation research. Many of the major universities of the world have helped to train this faculty; approximately 90 per cent of the graduate staff hold degrees from the forty-one institutions which make up the Association of Graduate Schools within the Association of American Universities. By place of birth they represent almost every state in the Union and almost two dozen foreign countries.

The fifteen hundred graduate students currently enrolled represent a similar diversity in background. Approximately 48 per cent of the stu-

dents recently completing degrees are from undergraduate colleges in the Southeast, 18 per cent are from the Middle Atlantic states, 11 per cent from the Central states, 10 per cent from New England, 3 per cent from the Far West, 1 per cent from the Southwest, 1 per cent from the Northwest, and 8 per cent from foreign countries. The old maxim that a university is only as good as its faculty might be amended by adding "and no better than its student body." No professor can *give* his wisdom to a student, and no student can *take* his understanding from another. This must be a reciprocal process between professor and student, and between student and student. The groundwork for learning may be laid in privacy—indeed a certain amount of private study and research is absolutely essential—but the vital stimulus to the learning process comes from one's contact with the minds of other men with similar or related interests. This is precisely why graduate schools are highly selective in their admissions policy, and it is one of the important reasons why they are willing to offer attractive fellowship awards to outstanding students. The superior student is a catalyst both for his fellow students and for his faculty, and is prized as such.

Faculty and students comprise the essential human factors in education, but their joint endeavor cannot prosper without adequate research and library facilities. Duke University is particularly fortunate in regard to research facilities, for the physics, botany, zoology, psychology, engineering and biochemistry laboratories have been entirely built within the last twenty years, and modernization and expansion have occurred in other scientific areas. It is also the University's pride that it has one of the finest research libraries, the seventeenth largest university library in the nation today, second in the South, and first in the Southeast. In number of volumes, breadth of coverage, serials, and documents, it is a much more adequate library than that available in many graduate schools with enrollment two or three times as large. To the student in the arts, humanities, and social sciences, for whom the library is the bloodstream of scholarship, this is an immeasurable asset.

Among the many special features of the Graduate School may be mentioned a few of importance to various graduate programs. For students in the biological sciences, the facilities of the Duke Marine Laboratory at Beaufort, North Carolina, are available for course work and research. The Laboratory has research buildings, class rooms, living quarters, and motor vessels, includng the 118-foot oceanographic ship, the R/V *Eastward*, which make it one of the best research centers in marine biology in the country. Closer to home are approximately 8,500 acres of the Duke Forest, managed by the School of Forestry, ideal for research on timber growth, soils, and related topics. A large phytotron has recently been completed. Students in both the physical and the life sciences frequently avail themselves of the facilities of the Oak Ridge

Institute of Nuclear Studies, of which Duke is one of the sponsoring universities.

In the social sciences the Commonwealth-Studies Center is internationally recognized for its graduate training and research program. It is today one of the major centers in the world, from the point of view of both faculty and library resources, carrying on studies of the various areas of the British Commonwealth. The Center is a cooperative enterprise of the Political Science, Economics, and History departments. Other important graduate programs with an international orientation focus on Europe, South Asia, Sub-Sahara Africa, and South America.

Other special teaching or research programs include the Lilly Endowment program in Christianity and the social order, jointly conducted by the departments of Political Science and Religion; the Ford Foundation-sponsored program in gerontology, conducted by the departments of Sociology and Economics; a joint program in the anatomical, physiological, and psychological aspects of behavior, with support under the National Defense Education Act; a research workshop on economic development for advanced students; and numerous others such as the Cooperative Programs with the University of North Carolina in the Humanities and in Slavic Studies. Duke is also fortunate in having excellent Medical, Law, Engineering, Forestry, and Divinity Schools on its main campus, thus making many additional facilities available for course or research work related to the graduate curricula in the arts and sciences. A two-term Summer Session and the availability of courses at the nearby University of North Carolina under a cooperative arrangement offer other opportunities to the graduate student.

* * * * *

No description of programs can begin to give the prospective student the full flavor of graduate study in a particular institution. The Duke Graduate School offers a warm invitation to interested students to visit the campus during the year in order to discuss their possible application and admission. The visitor will find at Duke most of the facilities that one could hope for in the largest of institutions, and yet the University has been fortunate in avoiding many of the evils inevitable with mass education. Despite the total University enrollment of approximately 7,800, Duke has retained the sense of community that one usually associates with a smaller liberal arts college. And in an age when current architectural whim often adds yet one more variant style to an already assorted array of buildings, Duke has built with foresight and design a campus of unusual beauty. This, too, is an important part of the fabric of education, helping to create an environment conducive to learning.

Courses of Study and Requirements for Degrees

The Graduate School of Arts and Sciences now offers the following degrees: Master of Arts (A.M.), Master of Science (M.S.), Master of Education (M.Ed.), Master of Arts in Teaching (M.A.T.), Master of Hospital Administration (M.H.A.), Doctor of Philosophy (Ph.D.), and Doctor of Education (Ed.D.).

The Master's Degrees

To be considered as a candidate for a Master's degree (A.M., M.S., M.Ed., M.A.T., M.H.A.), the graduate student must (1) have made passing grades in the first 12 units of course work, (2) have made a grade of *G* or *E* on at least 3 units of this work, and (3) have received the approval of the major department (or in the case of the M.A.T., of the supervisory committee).

Residence Requirements

Candidates for all Master's degrees must spend, as a *minimum*, one full academic year, or its equivalent in Summer Session terms, in residence at Duke University. (See p. 54.) Those who wish to complete

their degrees wholly in the Summer Session must be in residence for five terms. Depending upon the degree program pursued and the individual student himself, additional time frequently proves necessary.

Transfer of Graduate Credits

Under certain circumstances a maximum credit of 6 units may be allowed for graduate courses completed elsewhere. The acceptance of credit up to this amount, however, will not reduce the minimum of required registration at Duke University. (See p. 54.)

With the approval of both the student's major department and the Dean of the Graduate School, a student who is granted such transfer credit may be permitted to register for as much as 12 units of thesis research instead of the usual 6 units, or he may be permitted to fill out his schedule with as much as 6 units of further undergraduate training or 6 units of required language courses on the undergraduate level. In no case will credit be allowed for extension or correspondence courses.

Time Limits for Completion of Master's Degrees

The Master's degree candidate who is in residence for consecutive academic years should complete all requirements for the degree *within two calendar years* from the date of his first registration in the Graduate School. *Any candidate* must complete all requirements *within six calendar years of his first registration.*

To be awarded a degree in June the student must have completed all requirements, including the recording of transfer credit, by the last day of the final examination period. If a thesis is one of the requirements, it must be submitted to the Graduate Office by May 1. Candidates for degrees in the Graduate School of Arts and Sciences desiring to have their degrees conferred on September 1, must have completed all requirements as of the final day of the Duke University Summer Session. A candidate completing degree requirements after that date will have his degree officially conferred at the following June Graduation Exercises. (Transfer of credit for work completed at other universities must be recorded by September 15.)

The Thesis

The thesis should demonstrate the student's ability to collect, arrange, interpret, and report pertinent material on his special research problem. Although a publishable document is not required, the thesis must be written in an acceptable style and should exhibit the student's competence in scholarly procedures. Requirements of form are set forth in the Duke

University *Manual of Style for Theses and Dissertations*, revised 1961, obtainable at the Duke University Book Store.

Master of Arts

Prerequisites

As prerequisites to graduate study in his major subject, the student must have completed a *minimum* of 24 semester hours—12 semester hours of approved college courses in that subject, and 12 additional semester hours in that subject or in related work. Since some departments require more than 12 semester hours, the student should read carefully the special requirements listed by his major department, which are included as headnotes to the course offerings in this bulletin.

Language Requirements

The candidate for the A.M. degree must have a reading knowledge of at least one ancient or modern foreign language. (The several departments reserve the right to specify which foreign languages are acceptable.) For methods of satisfying language requirements, see p. 58. The language requirement must be satisfied before the Master's examination is taken.

Major and Minor Subjects

In his graduate work the student must present acceptable grades for a minimum of 24 units of graduate courses. Of these, at least 12 units must be in the major subject. A minimum of 6 units must be in a minor subject or related fields which are approved by his major department. The remaining 6 units of the required 24 may be taken in either the major or minor department, or in another approved by the major department and by the Dean of the Graduate School. In addition the student must present a thesis, which carries a credit of 6 units for which he must register. Thus, his earned credit for the degree totals a *minimum* of 30 units.

The Thesis

Filing the Thesis Title. On or *before March 1 for a June degree* or on or *before August 1 for a September degree*, the student must file with the Dean of the Graduate School, on the official form, the title of the thesis and a declaration of intention to graduate. If degree requirements have been met before the deadlines above, the intention to graduate must be filed one month before the thesis is presented. The title must have the ap-

proval of the Director of Graduate Studies in the major department, and of the thesis supervisor.

Preparing the Thesis. All basic requirements for preparing the thesis are described in the *Manual of Style for Theses and Dissertations,* revised 1961, obtained at the Duke University Book Store, West Campus. The quality of paper, form, and binding are prescribed in the *Manual.*

Submitting the Thesis. Four typewritten copies of the thesis bound in snap binders secured through the Graduate School Office must be submitted in approved form to the Dean of the Graduate School on or before May 1 for a June degree or August 15 for a September degree and at least three days before the scheduled date of the student's examination. The copies will then be distributed to the several members of the examining committee. Two copies for the Library and one for the adviser will be bound by the Ruzicka Bindery, fee $5.00 a volume. The student will state whether or not he wishes more than three so bound.

The Examining Committee and the Examination

The instructor who directs the thesis appoints an examining committee composed of himself and two other members of the Graduate Faculty, one of whom must be from a department other than that of the major. If the student has been permitted to take related work *within* the major department, the third member may represent the minor field within the department. This committee is submitted for approval to the Dean of the Graduate School when the thesis is first presented.

The candidate appears before this committee for an examination which lasts about one and one-half hours. The subject matter covered in the examination is usually restricted to the thesis and to the major field.

If the candidate passes his examination, the examining committee certifies this fact by signing the title page of all copies of the thesis and the signature card provided by the Graduate Office. The candidate then returns the original, the first two carbon copies of the thesis, and any others he wishes bound by Ruzicka, to the Dean of the Graduate School, who deposits them in the University Library.

Master of Science

The degree of Master of Science is offered in the three fields of Engineering—Civil, Electrical, and Mechanical—and in Forestry.

Prerequisites—Engineering

As prerequisites to this degree, the student must have earned a Bachelor's degree from an accredited engineering college and have completed a minimum of 12 semester hours of work in the major field.

Prerequisites—Forestry

As prerequisite to this degree, the student must have earned a Bachelor's degree which represents an undergraduate program in forestry or an allied field.

Language Requirements

For the Master of Science degree no foreign language is required.

Major and Minor Subjects—Engineering

The work for the Master of Science degree is designed to provide a broad foundation in the fields of civil, electrical, and mechanical engineering. The student must present acceptable grades for a minimum of 24 units of graduate courses: at least 12 in course work in his major area of concentration in engineering (not necessarily confined to the offerings of the engineering department in which the student is registered); a minimum of 6 units in a minor subject outside of engineering which lends broad support to his program (usually in mathematical or natural sciences); and the remaining 6 of the 24-unit course requirement in either the major or minor subject, or in an area approved by the major department and by the Dean of the School of Engineering. In addition to the 24-unit course requirement, the student must present a thesis, which carries a credit of 6 units. Thus his earned credit for the degree totals a minimum of 30 units.

Major and Minor Subjects—Forestry

The work for the Master of Science degree is designed to provide a basic foundation in a fundamental area of forestry or in a field closely allied with forestry. A minimum of 30 units of credit is required for the degree; 24 units must be in formal courses while not more than 6 units can be earned for the thesis. Specific course requirements call for a minimum of 12 units in a major field of specialization and 6 units in a minor area of concentration. The major and minor fields are determined without regard to departmental divisions of the University if the interdisciplinary nature of the area of specialization makes such a program of study advisable. The specific program of study is developed by the major professor (thesis supervisor) subject to the approval of the Director of Graduate Studies in Forestry and the Dean of the Graduate School.

Thesis and Examination

The regulations and procedures for the thesis and the provisions for examination and an examining committee are the same as those for the Master of Arts degree. (See pp. 6-7.)

Master of Education

Prerequisites

Before a student is admitted to graduate study for this degree, he should have completed, on the undergraduate level, a minimum of 18 semester hours of approved work in Education.

Before the degree is conferred the student must have had one year of actual teaching experience, or have met certification requirements by supervised student teaching in an accredited school. Such supervised student teaching may be at either the undergraduate or the graduate level.

The Thesis

The Master of Education degree may be earned either with or without a thesis.

Without thesis. The required work includes a departmental major (Administration, Counseling, Elementary Education, Secondary Education, or Teaching the Emotionally Disturbed) of at least 12 units, and a minor of at least 6 units outside the Department of Education. The remaining 12 units are elective within the area of Education and the minor field, but require the approval of the student's major adviser and the Director of Graduate Studies.

Toward the end of his residence the student must pass a comprehensive examination on his departmental major. This examination shall be prepared and conducted by the instructors of the student's major as designated by the Director of Graduate Studies of the Department of Education. Request to take this examination should be made to the Director of Graduate Studies at least two weeks before the date on which the examination is to be conducted.

With thesis. Students who elect this plan are permitted to substitute a thesis for 6 units of the required course work. The thesis subject must be approved by the instructor who is to direct it, and by the Director of Graduate Studies.

In addition to the thesis, the student must present at least 24 units of course credit. Of these, 12 units must be taken in the student's departmental major. Six units, constituting a minor, must be taken outside of the Department of Education. The remaining 6 units are elective within the area of Education and the minor field, but require the approval of the student's major adviser and the Director of Graduate Studies.

The regulations governing the thesis are the same as those for the Master of Arts degree.

Recommendation for Teacher Certification

Elementary school teachers who already hold certificates and who desire the recommendation of Duke University for a graduate teaching

certificate must include in their Master's program a minimum of 12 semester hours in subjects ordinarily taught in elementary school and 12 semester hours in education courses designed to improve them as elementary school teachers.

Master of Arts in Teaching

Prerequisites

The degree of Master of Arts in Teaching is designed for teachers already in service and for recent graduates of liberal arts colleges who wish to teach in a public school, private school, or junior college.

A student should normally have completed a minimum of 12 semester hours in his proposed major subject and an additional 12 semester hours in that or related subjects. Should a student wish to undertake a graduate major different from his undergraduate major, the prerequisites may be modified upon the recommendation of the student's committee and the approval of the Dean of the Graduate School.

Programs for the Degree

Either of two programs may be arranged, in consultation with the student's committee. In both programs a *minimum* of 30 units is required.

1. A major in Education of 18 to 24 units and 6 to 12 units in non-education courses (for students seeking certification).
2. A major in non-education courses of 18 to 24 units and 6 to 12 units in Education (for students already certified).

The non-education courses are to be taken in one or more subjects ordinarily taught in the secondary schools. The amount and distribution of this work will be determined by the needs of the individual student. A major in Biological Sciences or in Physical Sciences is possible in this program. Teachers who have already completed certification requirements must major in a teaching field in their Master of Arts in Teaching program. Students who have not completed certification requirements must major in education.

The Master of Arts in Teaching may be earned with or without the presentation of a thesis. If a student, in consultation with his committee, elects to present a thesis, 6 units of the total of 30 units required will be allotted to thesis research. He will then be required to complete 24 units of course credits. The regulations governing the thesis are the same as those for the A.M. (see p. 6). Candidates for the Master of Arts in Teaching who have not had teaching experience are required to take Education 215-216 in which case a minimum of 36 units is required.

The Committee

Each candidate for the degree will be assigned a committee, appointed by the Director of Graduate Studies in the major department or area. This committee will consist of three members, at least one of whom will be from the Department of Education, and at least one from another department. The chairman of the committee will normally be chosen from the department of the major.

Recommendation for Teacher Certification

Secondary school teachers who already hold certificates and desire the recommendation of Duke University for graduate teaching certificates must include in their Master's program a minimum of 18 semester hours in their teaching fields and 6 semester hours in courses in education designed to improve them as secondary school teachers.

Master of Hospital Administration

Prerequisites

The Master of Hospital Administration degree is designed for persons intending to pursue a career of management in hospitals and other health agencies.

No specific undergraduate major is required for participation in graduate studies leading to this degree, but certain courses are prerequisites:

2 semesters of natural sciences
2 semesters of economics or political science, or 1 semester of each
2 semesters of psychology or sociology, or 1 semester of each
2 semesters of accounting, either basic or managerial

In selected cases, students who have not completed all prerequisites may be admitted on a conditional basis subject to completion of deficiencies while completing other requirements of the degree program.

Program for the Degree

The program for this degree includes 36 graduate units, of which 18 are in courses in Hospital Administration and 18 are in designated courses in Economics, Political Science, and Sociology.

Completion of this program ordinarily requires 24 months. Included is a 12-month administrative residency which is conducted under faculty supervision in hospitals and other health agencies within commuting distance of the University campus. A portion of the residency is devoted to preparation and presentation of a written management study.

Comprehensive Examination

Successful completion of a comprehensive examination, consisting of both oral and written phases, is a prerequisite qualification for the M.H.A. degree.

The Doctor's Degrees

Doctor of Philosophy

The Ph.D. degree is essentially a research degree. Although course work is a necessary part of the student's program, the mere accumulation of course credits will not be sufficient for attaining this degree. The granting of the Ph.D. is based primarily upon the student's knowledge of a specialized field of study and upon the production of an acceptable dissertation embodying the results of original research.

Requirements for the Ph.D. Degree

The formal requirements, discussed in detail below, for the Ph.D. degree are as follows: (1) foreign languages; (2) major and minor courses; (3) supervisory committee for program of study; (4) residence; (5) preliminary examination; (6) dissertation; (7) final examination. In order to be considered for candidacy for the Ph.D. degree, the student must have passed all of his course work in the first year of graduate study; on at least 9 units of course work in the first year he must have made a grade of *G* or better.

Foreign Languages

A reading knowledge of two acceptable foreign languages is required. (For acceptable languages and methods of meeting this requirement, see p. 58.)

A student working toward the doctoral degree should complete the language requirements for that degree by the end of his first year of residence. If he fails to meet these requirements by the end of his third semester of residence, he must register in the appropriate special reading course or courses (see page 59) until he has satisfied the requirements.

The foreign language requirement must be met before preliminary examinations are taken.

Major or Minor

The student's program of study necessarily demands substantial concentration on courses in his major department. It may, however, include

a minimum of six units in a minor subject or related fields approved by his major department. Use of related fields within the major department requires the approval of the Dean of the Graduate School.

Committee to Supervise the Program of Study

As early in a student's course of study as is practicable and *not later than two months before the preliminary examination* the Director of Graduate Studies in the major department will nominate for the approval of the Dean a supervising committee of five, one being designated as chairman. This committee will include at least three members of the major department and one from the minor if a minor is involved. This committee will draw up a program of study and administer the preliminary examination and, with such necessary changes as are approved, the final doctoral examination. However, should all members of the committee be from the major department, at least one member of another department will be added or substituted for the final doctoral examination. The final examination may be administered with a minimum of four members.

When the preliminary examination is arranged, the committee and the Director will submit to the Dean the student's program of study bearing a statement that the Department's course and language requirements have been or are being completed.

Residence

For students who first registered in September 1959 or thereafter the *minimum* registration requirement is 60 units of graduate credit not more than 30 units of which may be accepted by transfer. Since a full program is 30 units per academic year, the prospective Ph.D. candidate who enters with the A.B. or B.S. degree must plan to spend in residence a *minimum* of two academic years; if he enters with the A.M., his *minimum* residence is one academic year. (For the definition of *residence*, see page 54.) If there are undergraduate deficiencies in his program, he may in addition to the minimum requirements be required to take preliminary undergraduate courses for which he will not receive graduate credit. Even if there are no such undergraduate deficiencies, the student's supervisory committee will determine what requirements if any above the minimum the student must meet.

Credit for Summer Work. Credit earned in the Summer Session will not reduce the minimum required residence (see p. 54).

Time Limitations

1. At the time that the preliminary examination is passed any courses, language certifications, or other credits for advanced standing which are more than six calendar years old will not be accepted toward fulfilling the minimum requirements of the doctoral degree.

2. The student should normally pass the preliminary examination by the end of his second year of graduate study. If he has not passed it by the middle of the third year, he must file with the Dean of the Graduate School a statement explaining the delay and setting a date for the examination. Except under unusual circumstances, extension will not be granted beyond the end of the third year.

3. The doctoral dissertation should be submitted and accepted within two calendar years after the preliminary examination is passed. Should the dissertation not be submitted and accepted within four years after the examination, the candidate, with the approval of his committee, may petition the Dean of the Graduate School for an extension of one year. Should this extension be granted and the dissertation not be submitted and accepted within the year, the student must pass a second preliminary examination to remain a candidate for the degree. In such a case, the time limit for submitting the dissertation will be determined by the Dean of the Graduate School and the candidate's committee.

Preliminary Examination

A student is not accepted as a candidate for the Ph.D. degree until he has passed the preliminary examination. A transfer student who may have passed a preliminary examination elsewhere must nevertheless take the examination in this Graduate School. The examination ordinarily covers both the major and minor fields.

In the summer, a preliminary examination may be scheduled only between the opening and closing dates of the Summer Session.

Privilege of Re-Examination. Should the student fail the preliminary examination, he may apply, with the consent of his supervisory committee and of the Dean of the Graduate School, for the privilege of a second examination to be taken no sooner than three months after the date of the first. Failure on the second examination will render the student ineligible to continue his program for the Ph.D. degree at Duke University.

Reduction in Registration. Because the student who passes the preliminary examination is eligible for a reduction in required registration, he should assume responsibility for prompt notification of the decision to the Graduate School Office.

The Dissertation

The dissertation is expected to be a mature and competent piece of writing, embodying the results of significant and original research.

Filing Title. One month before the dissertation is presented and not later than March 1 (March 2 if March 1 falls on Sunday) preceding the June commencement at which the degree is expected to be conferred, the student must file with the Dean of the Graduate School, on the official form to be obtained from the Graduate Office, the title of the dissertation.

This title must receive the written approval of both the Director of Graduate Studies of the student's major department and the professor who directs the dissertation.

Form. The basic requirements for preparing the dissertation such as quality of paper, form, and binding are prescribed in the instructions for microfilming (see below) and in the *Manual of Style for Theses and Dissertations,* revised 1961, to be obtained from the Duke University Book Store, West Campus.

Submitting Dissertation. The dissertation must be completed to the satisfaction of the instructor who directs it. Four typewritten copies bound in snap binders secured through the Graduate School Office must be deposited with the Dean of the Graduate School on or before *April 15* preceding the June commencement when the degree is to be conferred. The dissertation must be submitted to the Graduate Office at least seven days before the scheduled date of the student's examination.

Publication on Microfilm. All doctoral dissertations will normally be published on microfilm through University Microfilms, Ann Arbor, Michigan. Authors may, if they wish, also copyright them. The abstract will be published in *Dissertation Abstracts.*

In brief, all copies of the dissertation, the original in clean type, will remain unbound except for spring binders. Ten copies of an *abstract,* carefully written and not more than 600 words long, are submitted when the dissertation is first presented to the Graduate Office. A non-returnable dissertation fee of $25 is charged for microfilming. If copyright is desired, an additional fee of $7 plus 2½ cents per page is charged. The original and two copies will be bound by the Ruzicka Bindery. The fee is $5.00 per volume. The student may request that more than the three copies be so bound.

Final Examination

The final oral examination shall be primarily on the dissertation. Questions may, however, be asked in the candidate's major field. Except in unusual circumstances approved by the Dean a final examination will not be scheduled when school is not in session.

If a student fails his final examination, he may be allowed to take it for a second time, but not sooner than six months from the date of his first. Permission to take the second examination must be obtained from the instructor who directed the dissertation and from the Dean of the Graduate School. Failure to pass the second examination renders the student ineligible to continue work for the Ph.D. degree at Duke University.

Deposit of the Dissertation

After passing the examination, the candidate brings to the Graduate Office the original and first two carbon copies of the dissertation,

properly signed, and any other copies he wishes bound by Ruzicka. At this time he signs the microfilming agreement and pays such binding, microfilming, and copyright fees as are due.

Doctor of Education

The Doctor of Education degree is a professional degree planned for those who are, or intend to become, school administrators, supervisors, directors of instruction, curriculum consultants, college teachers of education, or other professional personnel.

Requirements for the Ed.D. Degree

The candidate for the Ed.D. degree must meet the same requirements as the candidate for the Ph.D. degree. In addition to these uniform requirements, the candidate for the Ed.D. (1) must have had at least two years' experience in educational work; (2) must present strong letters of appraisal and recommendation from persons well qualified to speak with authority of his abilities; and (3) must present himself, if possible, for a personal interview. The Standing Committee on the Ed.D. degree reserves the right to insist upon an interview.

Persons who are primarily concerned with meeting requirements set by North Carolina for the advanced certificate for principals and supervisors must request and secure admission for doctoral study.

Residence Requirements

Regulations concerning residence requirements, grades required during the first year of graduate study, and the preliminary examination are the same as those for the Ph.D. (See pp. 12-14.)

Foreign Languages

There are no foreign language requirements for the Ed.D. degree.

Program of Work

The candidate for the Ed.D. degree will choose as his major field either Educational Administration and Supervision or Curriculum and Instruction.

Candidates in Administration and Supervision will take approximately 24 units in that field, including the seminar in School Administration. In addition, they will take approximately 18 units in other professional courses, and a minor of approximately 18 units approved by the candidate's supervisory committee and the Standing Committee on the Ed.D. degree.

Candidates in Curriculum and Instruction will take approximately 24 units in Curriculum and Instruction. In addition, they will take approximately 12 units in other professional courses, and a minor of approximately 24 units in the humanities, the natural sciences, or the social sciences, exclusive of professional education.

The program of work for each candidate must be approved by the Standing Committee for the Ed.D. degree.

Dissertation

The candidate must write a dissertation, for which the formalities of presentation, including its defense in a final examination, are the same as those for the Ph.D. degree. The type of dissertation will depend upon which of the following plans the candidate adopts:

Plan A. A candidate choosing Plan A will write a dissertation which is expected to be a mature piece of writing embodying the results of significant and original research. It must be, in essence, a contribution to knowledge.

Plan B. A candidate choosing Plan B will serve at least a year in an administrative post, or a teaching position in an elementary or secondary school, subsequent to the completion of all course requirements and a year of residence. His dissertation may be concerned with a problem, or several closely related problems, growing out of this experience. Although the dissertation written under Plan B is of a practical nature, it must demonstrate the candidate's ability to investigate and report on a significant phase of education in his major field.

Publication on Microfilm. The dissertation will be published on microfilm, as is the dissertation for the Ph.D. (See p. 15.)

Final Examination

Regulations for the final examination are identical with those of the Ph.D. degree. (See p. 15.)

Special and Cooperative Programs

Program in Comparative Studies on Southern Asia

The Program in Comparative Studies on Southern Asia was established at Duke University in 1961 following a grant from the Ford Foundation to the Commonwealth-Studies Center to enable it to develop a research and training program on that area. In 1961 the University entered into a contract with the United States Office of Education and sponsored a South Asian Language Training and Area Center under the provisions of Title VI of the National Defense Act. The basic purpose of this program is twofold: to facilitate research on the political, historical, economic and socio-cultural development of Commonwealth countries in Southern Asia (India, Pakistan, Ceylon, Malaysia and Singapore) and to provide for the systematic training of graduate students in economics, history, political science, and sociology-anthropology with special emphasis on the area.

The graduate student, in addition to meeting the requirements of the department in which he is enrolled, is expected to take Hindi-Urdu or another major South Asian language, and the cognate courses in other departments, and to undertake field research in the preparation of his dissertation.

The Program awards each year a limited number of pre-doctoral fellow-

ships under the conditions specified above. Awards carrying the same expectations are also made under the NDEA Title VI language fellowships offered by the United States Office of Education.

Facilitation and support of research activities by members of the Duke University faculty and graduate students are important aspects of the Program's activities. It supports through travel grants and subsistence allowances field research by persons affiliated with the University. Research grants for faculty and students are also available from the American Institute of Indian Studies and the United States Office of Education. Research facilities include those materials received as a result of the University's participation in a library acquisitions program under the terms of Public Law 480.

The Program has undertaken the publication of three series: hard-cover monographs, reprints of articles of note dealing with the Southern Asian region and a series of occasional papers. Inquiries should be addressed to the Executive Secretary, Program in Comparative Studies on Southern Asia, Duke University, Durham, North Carolina.

Hispanic Studies Program

The Graduate School offers an inter-departmental program of Hispanic studies leading to the A.M. and Ph.D. degrees. Students may write their theses and take their degrees in history, economics, political science, sociology, or Hispanic languages and literatures. The purpose of the program is to make possible desirable combinations of courses on the Hispanic world in these related disciplines and to bring to bear more strength of the faculty upon the training of a single candidate. This may be achieved through a judicious use of minors or by such special arrangements as may from time to time become necessary.

The Duke University Library holdings have been built up to facilitate graduate work and research in Hispanic-American cultural history, inter-American relations, economic history, politics, and Spanish-American literature. These collections are being constantly enlarged.

The Population Studies Program

The Population Studies Program at Duke University was established in 1963 as a joint enterprise of the Departments of Economics and Sociology and was charged with both educational and research functions in the area of Demography and Human Ecology.

Training under the auspices of the Program leads to a Ph.D. degree within the Departments of Sociology or Economics with a specialization

in Population Studies. Two training programs are available, one in each department. Each is designed to provide an integrated and cross-disciplinary training in the common speciality area of Population Studies.

In addition to cross-departmental courses, program unity is produced through a Population Studies Seminar. This Seminar, which is non-credit and informal, is attended by advanced students and by faculty in both departments. The Seminar provides briefing on demographic research conducted by both faculty and students in the two departments. It also serves as a vehicle for a number of visiting lecturers in demography each semester.

Graduate fellowships for students in the Program are available in either of the two departments.

The Center for Southern Studies

The Center for Southern Studies in the Social Sciences and the Humanities at Duke University was formally opened July 1, 1965. It is not a degree-granting agency, but both the M.A. and the Ph.D. degree with a Southern area orientation may be earned through most of the departments associated with the Center. These are History, Economics, Political Science, Sociology and Anthropology, English, Education, and Religion. The general goal of the Center is the integration and promotion of human knowledge about the South in the areas represented by the associated departments. To this end the Center has formulated a program which includes public lectures, seminars, symposia, publications, travel, visiting lectureships, pre-doctoral and post-doctoral fellowships.

Oak Ridge Institute of Nuclear Studies

Duke University is one of the sponsoring universities of the Oak Ridge Institute of Nuclear Studies located at Oak Ridge, Tennessee. The graduate research program at Duke has available to it all the facilities of the Oak Ridge National Laboratory and the cooperative supervision of student research by the staff at Oak Ridge.

Fellowships in several fields of science are available to qualified applicants.

Graduate Fellowship Program. On application by a university the Institute awards fellowships to candidates for the master's and doctor's degrees. The student uses the fellowship to conduct his thesis research in an Oak Ridge laboratory.

AEC Special Fellowships. These are available in the fields of (1) Nuclear Science and Engineering, (2) Health Physics, (3) Advanced Training in Health Physics, and (4) Industrial Hygiene.

The application deadlines differ for different fellowships. Further information may be obtained from Lewis E. Anderson, Department of Botany.

Biomedical Engineering Program

The Graduate School offers an interdisciplinary program in biomedical engineering leading to the M.S. and Ph.D. degrees. Students write their theses and take their degrees in one of the engineering departments or physiology. The purpose of this program is to encourage the optimum combining of engineering and biomedical course work with an interdisciplinary research topic so that the graduates of this program can contribute at the most advanced professional level to the interdisciplinary field of biomedical engineering.

The major research areas available include: biomechanics; biomedical materials; biomedical modeling; data acquisition and processing; and electrophysiology. Information about graduate fellowships may be obtained from Dr. Theo C. Pilkington, Chairman, Division of Biomedical Engineering.

Commonwealth-Studies Center

The Commonwealth-Studies Center was established at Duke University in 1955 and has received financial support from the Carnegie Corporation of New York, the Rockefeller Foundation, and the Ford Foundation. Its objectives are:

1. to encourage and stimulate by financial assistance and other means the research interests of individual scholars in Commonwealth fields,
2. to establish at Duke University a Center whose facilities will promote interest in research relating to the Commonwealth, provide the materials for basic research, and encourage research by Commonwealth and American students and faculty.

The Center awards fellowships to graduate students from Australia, Canada, and New Zealand who propose to study for the Ph.D. degree in economics, history, or political science at Duke University. National selection committees in each of the mentioned countries facilitate the selection of fellows.

Each spring the Center sponsors a joint seminar for graduate students in economics, history, and political science. In addition the Center sponsors occasional lectures at the University by distinguished Commonwealth scholars.

Financial assistance is provided to students and faculty at the University for field research in Commonwealth countries. Studies resulting from research sponsored by the Center are frequently published by the Duke University Press in the Commonwealth-Studies Series. The Center also distributes in its reprint series selected published articles that relate to the Commonwealth. Inquiries should be addressed to the Executive Secretary, Commonwealth-Studies Center, Duke University, Durham, North Carolina.

Cooperative Programs with the Consolidated University of North Carolina

Interchange of Registration. (See p. 56.)

Library Exchange

Students of both the University of North Carolina and Duke University are granted certain library privileges in the respective libraries of each University. Books unavailable in one library may be procured on short notice through an interlibrary loan service.

The Cooperative Program in the Humanities

The Cooperative Program in the Humanities, jointly managed by Duke University and the University of North Carolina at Chapel Hill, aims at expanding and improving activities in the humanities in the two universities and throughout the region. The Program was established in 1963, with offices on both campuses, and receives substantial financial support from the Ford Foundation.

The central feature of the Program is a cooperative exchange between the two universities, on the one hand, and a number of liberal arts colleges on the other. Academic-year research leaves are made possible for faculty members from humanistic departments of liberal arts colleges located in Virginia, North Carolina, and South Carolina. These scholars are known as Humanities Fellows. Each Fellow has a significant, clearly defined research project. As partial replacements for the Humanities Fellows during their year of leave, the Program, whenever possible, offers the colleges advanced graduate students from the two universities. This arrangement permits a certain number of Duke and University of North Carolina students to have both a full year of teaching at a college or university in the area, and a duty-free year afterwards, with a stipend of $3,000 to enable him to complete his degree.

The Program sponsors semester visits of distinguished professors in the Humanities. In addition to teaching, these Professors give occasional

public lectures on both campuses. The Program also makes possible shorter visits by well-known humanistic scholars.

The Program conducts two summer activities: (1) The Southeastern Institute of Medieval and Renaissance Studies has been established for the advancement of scholarship and the improvement of teaching in the southeastern region. The fourth Institute will consist of seven informal seminars, each led by a Senior Fellow. Each seminar will have an enrollment of about six faculty members from colleges in the southeastern region. Post-doctoral students of all areas of medieval and renaissance studies are invited to participate. (2) A number of Summer Research Awards are available for faculty members at Duke and the University of North Carolina.

Inquiries may be directed to the Program office, 504 Library, Duke University.

Cooperative Program in Russian and East European History

The graduate schools of Duke University and the University of North Carolina offer a cooperative program leading to the M.A. and Ph.D. degrees in Russian and East European studies. Students admitted to one institution are encouraged to enroll in those courses in the other that are advantageous to their programs, and to utilize the libraries and facilities of both universities. The holdings of the two libraries in Russian and East European materials are substantial and complementary. Both libraries have a policy of purchasing all significant published works in Slavic history, economics, government, geography, literature, and linguistics. Graduate assistantships and fellowships of various types complete the program.

Cooperative Program in Teacher Education (Secondary) (M.A.T. degree)

Selected graduates of liberal arts colleges who have not completed a teacher preparation program will be admitted to the Cooperative Program in Teacher Education to complete simultaneously in their graduate programs requirements for a teacher's certificate and additional training in the field to be taught. Full-year internships with salary are arranged with cooperating public and private school systems. Students admitted to this program are required to attend the first Summer Session before their internship. This program is limited to students preparing to teach in junior or senior high schools. For materials describing this program, write to the Graduate School of Arts and Sciences or to Director, Cooperative Program in Teacher Education, Department of Education.

Cooperative Program in Junior College Teaching (M.A.T. degree)

Selected graduates of liberal arts colleges who wish to prepare to teach in junior colleges should apply for admission to the Cooperative Program in Junior College Teaching by writing to the director of this program in the Department of Education. Internships with salary for one quarter are available in one or more cooperating junior colleges.

Prospective Teacher Program (Secondary) (M.A.T. degree)

Two-year fellowships are available for a limited number of selected college graduates who wish to prepare for junior or senior high school teaching. This program provides depth in both professional and non-professional fields and provides a gradual induction into teaching with some experience in working with culturally deprived children. Inquiries should be addressed to Director, Prospective Teacher Program, Department of Education.

Resources for Graduate Study

The Libraries

The University Libraries contain 1,863,000 volumes. In addition to the collections in the General Library, there are eight school and departmental libraries: Divinity, 132,000 volumes; Engineering, 38,500 volumes; Law, 151,000 volumes; Medical, 82,000 volumes; Woman's College, 163,000 volumes; Biology-Forestry, 91,000 volumes; Chemistry, 23,400 volumes; Mathematics-Physics, 32,400 volumes. In 1965–66, 82,000 volumes were added; 9,400 periodicals and 164 newspapers are received currently.

The Perkins Library building, which was doubled in size in 1949, incorporates many modern arrangements for the preservation of the collections and for the convenience of the research scholar. Construction on an extension of the Perkins Library facilities, designed to provide twice the existing space, began early in 1966. Book stacks, the reference room, the graduate reading room, and quarters for rare books and manuscripts are air-conditioned. In the stacks, 274 carrels are available to graduate students as places of study. Upon application, graduate students may receive permit cards entitling them to use of the stacks.

A division of photographic services, with the most modern cameras and other equipment for microfilming or other photographic reproduction of printed and manuscript materials, provides a battery of reading machines to serve the Library's large collection of microfilms of rare books, periodicals, and newspapers.

The extensive resources of the Library for research students may be suggested by the following special collections:

The Trent Collection of Walt Whitman, containing the first and all other important early editions or issues of *Leaves of Grass;* books and articles of Whitman biography and criticism; nearly 300 manuscripts and 400 letters; and pictures, sheet music, and other miscellanea.

The George Washington Flowers Collection of books, manuscripts, pamphlets, and newspapers on all phases of Southern history.

The Arents Collection of several hundred volumes relating to the culture and production of tobacco and the manufacture and distribution of tobacco products.

The James A. Thomas Collection of books on Chinese history and culture.

The Guido Mazzoni Library, a collection of approximately 23,000 volumes and 67,000 pamphlets covering the whole range of Italian literature, with special strength in the nineteenth century.

The Gustave Lanson Library of 12,000 books and monographs on French literature.

Latin-American Collections, built around a special Peruvian library of 7,000 books and manuscripts, a Brazilian library of several thousand volumes, and an Ecuadorian library of 2,000 volumes, supplemented by strong collections of the public documents of these and other Latin-American countries.

The Robertson Library of Philippiniana.

The Frank C. Brown Folklore Collection, consisting of about 38,000 manuscript pieces, 1,400 vocal recordings, and 650 musical scores of North Carolina folklore.

The Strisower Library of International Law, numbering about 5,000 volumes, with many rare books and periodical files.

The Trent Collection in the History of Medicine (Medical Center Library), containing about 3,000 books and 2,500 manuscripts with special strength in anesthesia, anatomy, English medicine, vaccination, yellow fever, pharmacy, and medical biography.

The Holl Church History Library, dealing primarily with the period of the Reformation.

The Frank Baker Collection of Wesleyana and British Methodism, consisting of 1,500 editions of the works of John and Charles Wesley, 8,000 volumes concerning all phases of the development of British Methodism, 4,000 volumes relating to the religious and social background of British Methodism, and 4,000 manuscript pieces by the Wesleys and their coadjutors and by British Methodists of the last 200 years.

Collections in English and American Literature, where emphasis has been placed principally on the eighteenth and nineteenth centuries, with the collections of Swinburne, Tennyson, Rossetti, and Bryant, significant groups of annotated copies and first editions of Coleridge and Byron, the

Carroll Wilson collection of Emerson, some 5,000 items of eighteenth-century English poetry and prose, and the Paul Hamilton Hayne library of American literature.

In addition to these and other special collections, the Libraries contain excellent files of United States federal and state documents, public documents of many European and Latin-American countries, and publications of European academies and learned societies. The newspaper collection, with 13,300 volumes and 15,000 reels of microfilms, has several long eighteenth-century files, strong holdings of nineteenth-century New England papers, and of ante-Bellum and Civil War papers from North Carolina, South Carolina, and Virginia; there are also many European and Latin-American papers. The manuscript collection of 3,900,000 items is particularly strong in all phases of the history, politics, and social and economic life of the South Atlantic region, though it includes also significant papers in English and American literature, and several notable medieval manuscripts in both Greek and Latin.

Science Laboratories

Botanical and Zoological Laboratories

Facilities for graduate study in the Departments of Botany and Zoology are located on the West Campus. A Biological Sciences building, completed in 1962, contains well-equipped modern laboratories for teaching and research in the various fields of botany, forestry, and zoology. Special facilities are available, such as animal rooms, greenhouses, darkrooms, refrigerated and controlled environment laboratories, electron microscopes, Van de Graaff accelerator, X-ray machines, radiation and radioisotope equipment, and other modern research facilities. Extensive facilities for experimentation in the environmental control of plant growth are available in the new phytotron adjacent to the Botany greenhouses.

The Botany Herbarium, containing over 310,000 specimens, is worldwide in scope and includes notable collections of mosses and lichens. The Biology-Forestry Library contains an outstanding collection of books and periodicals. The Library currently subscribes to over 800 journals and has 91,000 volumes. Unique assets for teaching and research are the Sarah P. Duke Gardens, conveniently located on the West Campus; the four-acre experimental plot and field laboratory developed by the Department of Botany; the Duke Forest, comprising 8,500 acres of woodland adjacent to the West Campus; the Field Station for the Study of Animal Behavior; and the Duke University Marine Laboratory at Beaufort, North Carolina. Duke University, through the Botany and Zoology Departments, is a member institution of the Organization for Tropical Studies

in Costa Rica, a facility providing excellent opportunities for course work and research in the tropical flora and fauna.

Scholarships for advanced study during the summer months are maintained at the Highlands Laboratory, Highlands, North Carolina; at the Marine Biological Laboratory, Woods Hole, Massachusetts; and at the Duke University Marine Laboratory. Requests for information concerning scholarships at the Highlands Laboratory should be addressed to the Botany Department, those at Woods Hole to the Zoology Department, and those at Beaufort to the Duke University Marine Laboratory.

Marine Laboratory

The Duke University Marine Laboratory is located at Beaufort, North Carolina, one and one-half miles from the open ocean. The physical plant includes five well-equipped research buildings, three classrooms, and three dormitories. The Laboratory provides excellent facilities for graduate courses in botany, geology, and zoology and for thesis research throughout the year. Special research and training facilities for field work in marine biology and biological oceanography include two motor vessels and a new 118-foot biological research vessel *Eastward*, with specialized apparatus for collecting and environmental measurements.

Six National Science Foundation Predoctoral Traineeships in biological oceanography and two Bureau of Commercial Fisheries Educational Grants in marine biology are available to advanced graduate students during the academic year. In the summer of 1968 twenty-five National Science Foundation Predoctoral Awards will be offered for course or research work in marine biology at the Marine Laboratory. For information concerning awards, courses, and research space, write to the Director, Dr. John D. Costlow, Duke University Marine Laboratory, Beaufort, North Carolina.

Animal Behavior Station

Located less than one mile from the campus, the 80 wooded acres of the Station provide facilities for studies of penned and free-ranging, and caged animals. These facilities include sound-proof observation chambers, barns, aviaries, and pens for large mammals and birds, and two water-fowl ponds. A new and extensive facility for the study of prosimian primates (both simulated "natural habitats" and cages) has just been completed. For information regarding research space or research assistantships in Animal Behavior, write to Dr. P. H. Klopfer, Department of Zoology.

Physical Laboratories

The Physics Building, comprising about 130,000 square feet of floor

space, is devoted to the research and instruction of the Departments of Physics and Mathematics.

In addition to the lecture halls and the elementary laboratories, there are instructional laboratories for work in electronics and advanced physics.

About half the building is devoted to special laboratories for research in microwave spectroscopy, atomic, nuclear, high energy, low temperature and solid state physics. Special equipment includes microwave spectrographs operating up to 500,000 megacycles; one 4 MEV and one high resolution 3 MEV Van de Graaff accelerator, a 30 MEV cyclotron/tandem Van de Graaff accelerator to be installed during 1968; a helium liquefier, cryostats, magnets and associated equipment for research down to the millidegree Kelvin temperature range; a DDP-24 computer used with two projection microscopes in the High Energy Physics Laboratory and a DDP-224 computer used in the Nuclear Structure Laboratory.

Duke University and the Raleigh and Chapel Hill branches of the University of North Carolina have organized a joint computing center which is equipped with a powerful computing system consisting of an IBM System/360 Model 75 at the Research Triangle center with a 360/Model 30 on each of the three campuses.

The Physics-Mathematics Library contains an unusually complete selection of books and periodicals. A large, well-equipped instrument shop staffed by nine instrument makers, four electronic technicians, and a glass blower is in the building. Graduate students are provided with office space in the Physics Building.

Chemistry Laboratories

A new Chemistry Building is scheduled for occupancy early in 1969. The building contains three and one-half floors which provide 146,440 square feet of total area. The usable space is over twice that of the present building. The entire building is air-conditioned and electrically heated.

The Chemistry Department is well equipped for performing research in analytical, inorganic, organic, and physical chemistry. Among instruments available for general use in various research problems are a Varian A-60 nuclear magnetic resonance spectrometer, a Bendix time-of-flight mass spectrometer Model 12, many recording spectrophotometers for infrared and ultraviolet-visible studies, and numerous gas chromatographs, analytical as well as preparative. Some other instruments of primary importance to specific research projects include Varian V-4502-12 and V-4502-15 electron paramagnetic resonance spectrometers, a Varian HR-60 nuclear magnetic resonance spectrometer, a Carey Model 14R ultraviolet-visible spectrophotometer, polarographs, a fluorescence spec-

trophotometer, a flame photometer, and optical equipment for photochemical and kinetic studies. Equipment for X-ray crystallographic investigations is extensive and includes a Rigaku-Denki low-angle X-ray diffractometer, a Kratky U-Bar camera, a General Electric XRD-5 diffractometer, a Picker automated full-circle X-ray diffractometer, and single crystal precession and Debye-Scherrer powder cameras. The Chemistry Department also has direct access to two other major instruments located in the Research Triangle Park. These are the A.E.I., Ltd., MS-902 high resolution double focusing mass spectrometer and the IBM 360-75 computer, the latter linked by cable to the Duke University Computing Laboratory.

The Department has its own machine shop, and electronics shop and a glass-blowing shop. The departmental library is located in the Chemistry Building. It has holdings of over 23,400 volumes and receives 230 current scientific periodicals.

Psychology Laboratories

The Psychology Department occupies new and fully renovated quarters, comprising about 53,000 square feet of floor space, which house its main laboratories, seminar rooms, classrooms, and special facilities. The building is completely air-conditioned for year-round research and study. For the use of graduate students and staff, the Department houses a periodical reference room with an extensive collection of current and bound journals and monographs in psychology and related subjects. In addition to general purpose laboratories, there are special facilities for studies of animal behavior; sound-proofed and electrically shielded rooms for use with human and animal subjects; specially equipped rooms for the study of visual perception; electrophysiological recording rooms; a histological laboratory and surgery; photographic dark rooms, etc. The social psychology unit (joint with the Department of Sociology) contains observation, communication, and recording facilities for the study of social interaction. There is an extensive suite of interview and observation rooms for the study of human personality and clinical processes. Automatic computation equipment is available for all research purposes. A departmental shop, with competent technicians in charge, is maintained to provide specialized mechanical and electronic apparatus. Other facilities for research and teaching are available in the laboratories and clinics of the adjacent Duke Medical Center.

A number of clinical installations for adults and children, devoted to an extensive range of clinical and guidance problems, cooperate with the department in providing facilities for research and training. In addition, the Department operates a Preschool Laboratory for four- and five-year old children. The Department cooperates with the Department of Zoology in the operation of an 80-acre field station in the near-by Duke Forest for

the study of animal behavior in natural settings. (See p. 28, Animal Behavior Section.)

Computing Laboratory

Since 1958 an IBM electronic digital computer has been available in the Computing Laboratory for instruction in programming and for research. The Computing Laboratory is under the guidance of the Department of Mathematics and is being used for research in the physical sciences, engineering, mathematics and in the biomedical and social sciences. The Laboratory is equipped with an IBM 360 computer which has direct access through a telephone linkage to an IBM 360 Model 75 having very large memory capacity. This computational network is shared with North Carolina State University at Raleigh and the University of North Carolina at Chapel Hill. It formed, at the time of its installation, one of the most powerful computing systems available to any university.

Engineering Research Laboratories

The laboratories of the three departments which comprise the School of Engineering contain a wide range of basic equipment that finds general application in the several fields of specialization. In addition, each laboratory contains selected items of highly sophisticated equipment used to support advanced research in areas of particular emphasis. The exceptionally fine facilities available for instruction and research are suggested by the following brief listing of selected items to be found in the three departments.

Civil Engineering: closed-loop, electrohydraulic dynamic loading system capable of applying pulses of any shape, of magnitudes up to 5,000 pounds, and controlled in either force or displacement modes in frequencies from zero to 100 cycles per second; vacuum-forming facilities for structural shell models; high-speed digital strain-measuring and recording systems; ultra-high-pressure triaxial shear apparatus for confining pressures up to 100,000 p.s.i.; high-speed camera for studying explosions and similar phenomena; large-aperture research polariscope; reflective photoelastic polariscope; sustained-loading facility for long-duration studies of prestressed concrete.

Electrical Engineering: high-resolution (7Å) electron microscope with heating and tilting stage; stereo optical microscopes; ion-pumped bakeable ultra-high-vacuum unit; helium dewars and cryostats; 9.5-inch magnet and regulated power supply with complete nuclear magnetic resonance system; spin-echo spectrometer; x-ray diffraction diffractometer with monochromator attachment furnaces; environmental test chambers; analog computer facility; multichannel tape and strip-chart recorders; complete x-band microwave instrumentation system; sampling

oscilloscope; cryomagnetic facility for susceptibility measurements; Digital Equipment Corporation Linc 8 computer.

Mechanical Engineering: digital data acquisition system, with high speed scanner and punched tape output; FM-AM instrumentation tape recorder; spectrum analyzers; storage and dual-beam oscilloscopes; oscillograph; X-Y and strip chart recorders; temperature, pressure, strain, force, and acceleration transducers; electrodynamic shaker table; sound room with associated sound measuring and analyzing equipment; experimental vacuum transport system (1800 ft. x 1 ft. diameter); fuel research engine; materials laboratory with injection molding, stereo and high temperature microscopes, heat treating furnace, etc.; (a small supersonic wind tunnel will be added in 1967-68).

Available to graduate students in all three departments of the School of Engineering are also the Central Service Shop facilities of the School, as well as those located elsewhere on the campus.

A major resource of Duke University is the Library, the School of Engineering division of which contains over 38,000 volumes and receives more than 450 periodicals. Students have full access to other specialized collections elsewhere on the campus.

The School of Engineering houses an IBM Model 1978 medium-speed card-reader punch and printer which communicates directly with the IBM System 360/Model 75 computation facility that is located in the Triangle Universities Computation Center in the adjacent Research Triangle Park.

Forest Sciences Laboratory

The establishment of the U.S. Forestry Sciences Laboratory research facility of the Southeastern Forest Experiment Station in the Research Triangle Park near Durham provides an unusual opportunity for complementing the research programs of students in the Department of Forestry. Specialized research projects in forest entomology, pathology, physiology and soils are currently under way at the Laboratory. The staff of the Laboratory is available for consultation and seminar participation, and may offer advice to students conducting research in the Department of Forestry. Arrangements may also be made for students to conduct certain aspects of their research at the Laboratory.

Duke Forest

The Duke Forest consists of approximately 8,500 acres of land, most of which is adjacent and easily accessible to the University campus. Situated in the lower Piedmont region and composed of second-growth shortleaf pine, loblolly pine, and hardwoods, the Forest is representative of the various types of timber growth and soils found throughout the

region. Through placing the Forest under intensive management for forestry purposes, substantial progress has been made in developing the educational work and research in forestry.

The proximity of the Forest to the laboratories, greenhouses, phytotron, and library facilities of the University provides an excellent opportunity for advanced study and research in forestry. Research, particularly in the fields of forest ecology, forest climatology, forest soils, forest management, properties of wood, forest-tree physiology, forest entomology, and forest pathology, is well under way. Several members of the botany and zoology staffs are also engaged in research in the Duke Forest.

Student Life

Living Accommodations

Duke University strives to provide comfortable, attractive living accommodations for graduate-level resident students, both married and unmarried.

The Graduate Center houses men and women enrolled on a full-time basis in the Graduate School of Arts and Sciences and the professional schools. Graduate women are also assigned to Hanes Annex, a residence hall, and to Town House Apartments located between the West and Woman's College campuses.

The Graduate Center houses 258 male graduate students, 60 women graduate students, and 56 women undergraduates. Commons facilities on the main floor are shared by men and women.

Hanes Annex has 39 beds for graduate and para-medical women students. The second floor of this building is used by seniors in the School of Nursing. Commons areas are jointly used by the two living groups.

Rooms in residence halls are normally rented for the academic year, but for no period less than one semester or specified term.

Town House Apartments include thirty two-bedroom units, each furnished for three graduate women students. Two students occupy the master bedroom and the third occupies a smaller bedroom. A living room, kitchen and one and a half baths complete these attractive living

units. No effort is made by the Office of Housing Management to assign bedroom space within each apartment.

Duke University Apartments for full-time married graduate and professional students are located in Duke Forest about one mile north of West Campus. The 224 units are complete with basic furnishings. Students with more than two children are not eligible for married graduate housing. Couples without children are not normally eligible for two-bedroom units.

Rooms in residence halls, spaces in Town House Apartments, and units in the married student apartments may be reserved by applicants only if they have been accepted by the Graduate School of Arts and Sciences, and after the required $25 room or security deposit has been made with the Duke University Bursar. The initial room or security deposit is required with the application and is held until the room or apartment is vacated. Application forms and detailed information on graduate housing will be mailed when the Graduate School of Arts and Sciences has notified the Office of Housing Management of official acceptance of the student. Single women may express a choice for the type of housing desired. Completed applications for rooms and apartments are to be returned, with required deposits, to the Office of Housing Management, Duke Station, Duke University, Durham, N.C. Assignment priority is established by the date of receipt of completed applications with deposits in the office of the Director of Housing.

Regulations governing occupancy of rooms and apartments will be provided by the Office of Housing Management at the time application forms are forwarded to accepted students. Occupants within each type of housing are expected to comply with the appropriate regulations.

For the cost of housing and for details on rental refund policy, see the section on Housing in the Financial Information chapter.*

Food Services

Food service on both the Woman's College Campus and the West Campus is cafeteria style. The dining facilities on the West Campus include one straight-line cafeteria with multiple-choice menus, a free-flow service area which includes cafeteria counters as well as a grill, and a table service dining room called The Oak Room where full meals and a la carte items are served by waitresses. The Graduate Center has a cafeteria open at meal hours, and a coffee lounge which is open until 11:00 p.m. Because of the large number of those served in the dining halls, it is not possible to arrange special diets for individual students.

For cost of food services, see the chapter on Financial Information.

*Information pertaining to residence halls and Duke University Apartments is subject to change prior to September, 1968.

Services Available

Medical Care

The complete medical facilities of the Duke University Medical Center are available to all members of the University community. To secure the benefits of the Student Health program, a graduate student during the term or semester in which the illness occurs must (1) in the Summer Session term be registered for at least 1 unit of research or 3 units of course work, (2) prior to completing minimum residence requirements be registered for at least 9 units per semester and thereafter according to the schedule on pp. 54 and 55. Students are not covered during vacations and their dependents and members of their family are not covered at any time. Care is provided for men at the Student Health Office in Duke Hospital and for women at the Woman's College Infirmary and in the Student Health Office.

The service provided includes hospitalization in Duke Hospital, when recommended by the Hospital staff, to a limit of thirty days in the fall and spring semesters—six days in the Summer Session; medical and surgical care under the supervision of a senior physician or surgeon; drugs, X-ray work, and ward nursing. Students pay for board while in the hospital. Excluded from the service are refraction of eyes, treatment of teeth, and of all chronic and pre-existing conditions, and elective surgery.

Off-campus injuries and accidents are not covered by Student Health. Graduate students are urged to carry adequate health insurance to supplement Student Health Program services. If students have insurance providing hospitalization, surgical, or medical benefits, the benefit shall be applied to the cost of their medical care.

Students whose course-load entitles them to full coverage under the Student Health program are eligible for a complementary insurance policy which then comprises protection for the entire calendar year. Concerning this complementary policy inquire of the Dean of the Graduate School. *Foreign students are required to hold this or another acceptable policy.*

Student Activities

Graduate students new to Duke University may be reminded that they are welcomed to use such recreation facilities as swimming pools, tennis courts, golf course, and to affiliate with choral, drama, and religious groups. They may become junior members of the American Association of University Professors and may affiliate with Phi Beta Kappa and social fraternities. Wives of graduate students may join the very active Graduate Wives Club.

The Duke University Counseling Center

Through the Counseling Center, the University provides a professional

counseling service designed to aid students in gaining a better understanding of themselves and the opportunities available to them. Counseling is available in the areas of career planning, educational opportunities, and personal and social adjustment.

The Center maintains files of educational and vocational information related to career planning, graduate educational programs and fellowships, and study aids.

National and University-wide testing programs are administered by the Center. A continuing program of research in the areas of counseling and testing is also carried on by the staff of the Center.

Appointments Office

Duke University maintains an active Appointments Office which has steadily been placing students in teaching and industrial positions. The services of this office are available without charge to graduate students. Those who are interested in securing employment through the Appointments Office, or those who wish to have available for their own use in securing employment a complete file containing their academic record and pertinent recommendations, should register in this office.

Research and Publications

The several departments of the University are devoted to research as well as to instruction. Since the University exists for the promotion and diffusion of knowledge, attention is rightly placed, in the Graduate School, on research activities.

In furtherance of the University's obligation to promote and diffuse knowledge, the President annually appoints a University Council on Research, which receives applications from members of the various faculties for subsidies in support of research. Vigorous and forward-looking policies of this Research Council have initiated and encouraged the completion of many substantial and important research projects.

The Duke University Press takes its place as a significant agency in the diffusion of knowledge. Created in 1925 as a successor to the Trinity College Press, the Duke University Press continued the publication of the *South Atlantic Quarterly*, published at Trinity College since 1902, and in 1926 revived the *Hispanic-American Historical Review*, which had been founded and published from 1918 to 1922 by a group of scholars interested in Hispanic America. In 1929 *American Literature* was begun with the cooperation of the American Literature Group of the Modern Language Association. This journal was followed in 1931 by *Ecological Monographs*, and in 1932, *Character and Personality* (since 1945 the *Journal of Personality*). In 1935 the Press began the publication of the *Duke Mathematical*

Journal. Since 1948 it has published *Ecology,* the official journal of the Ecological Society of America. The Law School of Duke University publishes *Law and Contemporary Problems, The Duke Bar Journal,* and *The Journal of Legal Education.*

The Press, since its organization, has published more than three hundred and eighty volumes. Included among these are six series: American Sociological Forum, Duke Historical Publications, Duke Studies in Religion, Lilly Endowment Research Program in Christianity and Politics, Sociological Series, and, largest of all with thirty-two volumes, the Duke University Commonwealth-Studies Center Publications. In the broadest sense, the policy of the Press is to make available to the public any scholarly work that merits publication, though special attention is given to works in fields of knowledge cultivated by the University.

Visiting Scholars

The libraries and, to the extent practicable, other facilities of Duke University will be made available to faculty members of colleges and universities who wish to spend a period of time on the campus in pursuit of their scholarly interests. No fees will be charged such visitors unless they wish to participate in activities for which a special fee is assessed. Room and board may be arranged for at the regular rates in the dormitories and dining rooms. Dormitory space is usually available during the summer months. Inquiries concerning residence for visiting scholars should be directed to the Dean of the Graduate School of Arts and Sciences.

Admission

Students Requiring Admission

Admission is required of (1) all students who intend to pursue study toward a degree offered by the Graduate School, (2) all other students who desire credit for whatever purpose for graduate courses—except students who register as Special Students in the Summer Session. Students who have discontinued a program of study after earning a master's degree here must by letter request permission of the Dean to undertake a doctoral program.

Prerequisites

A student seeking admission to the Graduate School of Arts and Sciences of Duke University must have received an A.B. or B.S. degree (or the equivalent in the case of foreign students) from an accredited institution. His undergraduate program should be well rounded and of such quality as to give positive evidence of capacity for graduate study. Normally he should have majored in the area of his intended graduate study. Many departments (see Courses of Instruction, p. 63) list specific prerequisites. Students are urged to anticipate at least one of the language requirements and are reminded that Educational Testing Service Graduate School Foreign Language tests in French, German, Russian, and Spanish are offered to undergraduate and graduate students at many centers on nationally uniform dates (see pp. 58-59).

Procedures

A student seeking admission to the Graduate School should request the Dean of the Graduate School to send an application blank. This he should fill out completely and return promptly. In addition he should provide the following supporting documents: (1) two copies of a transcript or transcripts of all his undergraduate and graduate work mailed directly by the registrar to the Dean; (2) as soon as possible, two supplementary transcripts showing completion of work in progress when the earlier transcript was made; (3) three letters of recommendation, written on the forms provided, by persons best qualified to judge him as a prospective graduate student and mailed directly to the Dean; and (4) scores on the Graduate Record Examination or Miller Analogies Test, as indicated below.

All applicants except foreign students applying from outside the United States and non-degree students must include the application fee of $5.00 in check or money order payable to Duke University.

Graduate Record Examination and Miller Analogies Test

Scores on the Graduate Record Examination, particularly the Aptitude Test, and on the Miller Analogies Test are strongly recommended in all departments and must be submitted if either test has been taken. Scores on the Graduate Record Examination may be requested of any applicant whose record is marginal and must be submitted by all applicants for a fellowship. Information on times and places of Graduate Record Examinations can be provided at the applicant's college or by the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey. Departments that require scores of all applicants are listed below.

Departments	*Graduate Record Examination*		*Miller Analogies*
	Aptitude	*Advanced*	
Anatomy	×	×	
Biochemistry	×	×	
Botany	×	×	
Chemistry	×	×	
Economics	×	×	
English	×	×	
Forestry	×		
Geology	×		
German	×		
History	×		
Mathematics	×		
Microbiology	×	×	
Pathology	×[1]		
Philosophy	×		×[2]

[1] If the candidate does not already hold an M.D. or D.V.M. degree he will be required to take the GRE Aptitude Test.

[2] Either GRE or MAT.

Physics	×	×	
Physiology	×		
Political Science	×		
Psychology	×	×	×
Religion	×		
Romance Languages	×	×	
Sociology	×	×	
Zoology	×	×	

Additional Procedure for Foreign Students

Fully qualified students from outside the United States are welcomed in the Graduate School to take courses and in many instances to study toward a degree. In applying for admission the foreign student should, in addition to the information required of all students, submit with his application (1) if his native language is not English, certification of ability to use English through scores on tests provided by the Educational Testing Service (TOEFL), the University of Michigan Language Institute, or the American University Language Center, (2) a statement certified by a responsible person that his finances are sufficient to maintain him during his stay at Duke University, and (3) a statement by a qualified medical doctor describing any emotional or physical illness the applicant has had during the previous five years.

All foreign students whose native language is not English will be examined during their first registration period for competence in the use of oral and written English. Until competence is determined, admission and arrangements for an award involving teaching must remain provisional. Students found to lack the necessary competence will be required to enroll in the non-credit course called English for Foreign Students and to reduce their course or research program three units. Passing this examination or the course, if it is required, will not meet degree requirements for a foreign language. (See page 60.)

Notification of Status

When admission is approved, the student will receive a letter of admission and an acceptance form. *The process of admission is not complete until the statement of acceptance has been returned.*

Applicants who are admitted will be offered full admission, provisional admission, or non-degree admission. *Provisional admission* is offered to students who (1) appear to warrant admission but do not fully comply with admission requirements, for a trial period of one semester or a minimum of 12 hours of course work, or (2) are admissible except that the application lacks a letter of recommendation, a supplementary transcript, required test scores, or some other required information. *Non-degree admission* is offered to students who (1) have no intention of taking an advanced degree at Duke University but wish to take courses for accreditation, for transfer to other institutions, or for other purposes,

or (2) do not fully meet admission requirements but wish to further their academic interests. Graduate credit earned under *provisional status* may be applied toward an advanced degree at Duke University if and when the student is granted full admission; graduate credit earned under *non-degree* status may not be applied toward an advanced degree at Duke University.

Deadlines for Applications

It is the applicant's responsibility to make certain that his application is completed and in order before the dates specified. Because applications cannot be reviewed until all supporting documents are filed, applications should be submitted at least *two weeks* before the closing dates listed below:

Fall semester, admission and award	February 15
Fall semester, admission only	August 1
Spring semester, admission only	January 1
Summer Session,* First Term	May 13
Summer Session,* Second Term	June 21

* Students seeking admission to the Graduate School for study in the Summer Session should make application to the Dean of the Graduate School as well as to the Director of the Summer Session.

Financial Information

Tuition and Fees

The Graduate School awards such financial aid as fellowships, scholarships, and assistantships. The several departments engage part-time instructors who may be graduate students. The Treasurer of the University, however, has sole responsibility for paying stipends to students, collecting from them such fees as are due, and making special arrangements for prorating fees.

Estimated Expenses in the Academic Year

The following table represents an estimate of a graduate student's basic expenses for one academic year for a full program of work. These figures do not include allowances for recreation, travel, clothing, and other miscellaneous items which vary according to the needs and tastes of the individual.

	Low	*Moderate*	*Liberal*
Tuition and fees	$1410.00	$1410.00	$1410.00
Room Rent*	325.00	325.00	420.00
Board	500.00	550.00	600.00
Laundry	40.00	45.00	50.00
Books	60.00	80.00	100.00
	$2335.00	$2410.00	$2580.00

*In the Graduate Center.

General Fees in the Academic Year

The following table shows the general fees and charges collected from all students. All fees for each semester are due and payable, unless otherwise specified, at the time of registration for that semester. All fees are subject to change without notice. No student is admitted to classes until arrangements have been made with the Bursar of the University for the settlement of fees.

Tuition and general fees* ($47.00 per unit)	$705.00
Athletic fee, optional, per year, not including federal tax, payable in the fall semester	15.00
Binding fee, three copies of thesis or dissertation, other copies optional, $5.00 a copy	15.00
ETS Foreign Language Test, each administration, payable to the University Counseling Center	8.00
In absentia fee, due on date of registration, one unit per semester	47.00
Late registration fee	5.00
Microfilming fee, doctoral degree only, upon final submission of dissertation	25.00

* General fees, in lieu of most special charges, include the following fees: Matriculation, Medical, Library, Damage, Commencement, Diploma, and an average of the Laboratory and Material Fees.

Tuition and fees for a full semester program of 15 units amount to $705.00. For a part program, tuition and fees are computed at the rate of $47.00 per unit. After the day of registration, no refund of the tuition and fees will be made except for involuntary withdrawal to enter the armed services or as indicated on p. 54 (Change of Registration).

Special Fees for Teachers and Others

The Graduate School recognizes a special obligation to encourage the following types of students in their professional and personal advancement: (1) members of the faculties of the neighboring public schools and colleges, currently engaged in *full-time* teaching while taking courses in the Graduate School, (2) ministers of neighboring churches, (3) wives of Duke faculty members, (4) *full-time* employees of Duke University who are paid on a monthly basis *throughout* the year and have been employed for two years. The reduced fees specified below do not apply to teachers and ministers while on leave of absence, nor to holders of fellowships, scholarships, or graduate and research assistantships, nor to part-time instructors.

Persons eligible for the reduced fee must meet the admission standards required of all graduate students and must be admitted to the Graduate

School. They may enroll for one or two courses per semester (in no case totaling more than 7 units) upon payment of a fee of $5.00 for registration for each semester and a tuition fee of $25.00 per unit of credit or an audit fee of $25.00 per course. Residence requirements for the Doctor's degree cannot be fulfilled at the reduced rate.

Audit Fee

In a semester in which a student registers and pays fees for 9 units or more, he may audit one course without charge. Should he be permitted to audit a second course or should he be registered for less than 9 units, the audit fee is $25.00 per course.

Transcript

A student who wishes to transfer his credits from Duke University to another institution is entitled to one free transcript of his record. A fee of one dollar, payable in advance, is charged for each additional copy. Requests are directed to the Central Records Office.

Fee Adjustment with Change of Registration

Arrangements made with the Bursar to prorate tuition and fee charges do not imply that the full amount is not due and payable on the date of fall and spring registration. For fee adjustment arising from change of registration, see Change of Registration, page 54.

Stipends and Income Tax

Ordinarily stipends awarded under fellowships and scholarships are not subject to income and Social Security tax. However, a portion of the award to graduate assistants and research assistants may be subject to both. The Graduate Office will supply detailed information.

Living Accommodations

Housing

Rooms in residence halls are normally rented for the academic year, but for no period less than one semester or specified term. The rental charge for each person assigned to a double room in the Graduate Center is $325.00 for the academic year, and in Hanes Annex, $355.00 for the same period. A limited number of single rooms are usually reserved for returning students.

Each student assigned to the Town House Apartments is currently charged $495.00 for the academic year on the basis of three individuals to an apartment. Utility charges are included in these rates.

Duke University Apartments for full-time, married graduate and professional students currently rent at the following rates:

Efficiency Unit	$70.00 per month
One-Bedroom Apartment	$90.00 per month
Two-Bedroom Apartment	$110.00 per month

Utility expenses are included in these rates.

Rooms in residence halls, Town House Apartments and married student apartments may be reserved by applicants only if they have been accepted by the Graduate School and only after the required $25.00 room or security deposit has been made with the Duke University Bursar. This initial deposit is held until the room or apartment is vacated.

No refund on residence hall room rent or the rent for spaces in Town House Apartments is made to students who withdraw after the date of registration, except for those who involuntarily withdraw to enter the armed services. Such refunds will be made in accordance with the University's established schedules.

For further information on housing facilities, see Living Accommodations in the chapter on Student Life.*

Food Services

Food service, on both the Woman's College Campus and the West Campus, is described on p. 35. The cost of meals approximates $2.50 to $3.00 per day, depending upon the needs and tastes of the individual.

Motor Vehicles

Each student possessing or maintaining a motor vehicle at Duke University shall register it annually at the beginning of the fall semester. If a student acquires a motor vehicle and maintains it at Duke University after academic registration, he must register it within five (5) calendar days after operation on the campuses begins. Resident students are required to pay an annual parking fee of $30.00 for each automobile and $10.00 for each two-wheeled motor vehicle. If a vehicle is removed from the campus permanently prior to February 15 and its decal returned to the place of registration by that date, there will be a partial refund on the registration fee.

At the time of registration of a motor vehicle, the following documents must be presented: (a) state vehicle registration certificate; (b) valid driver's license; (c) satisfactory evidence of automobile liability insurance

*Information pertaining to residence halls and Duke University Apartments is subject to change prior to September, 1968.

coverage with limits of at least $10,000 per person and $20,000 per accident for personal injuries, and $5,000 for property damage, as required by the North Carolina Motor Vehicle Law.

Student Aid

The principal forms of graduate student financial support available at Duke University are fellowships, scholarships, assistantships, part-time instructorships and tutorships, loans, and part-time degree-related employment within University agencies.

Application for Awards

Prospective Students

Persons applying to the Graduate School for admission and award (see application form) will receive consideration for all suitable forms of financial aid available in the Duke departments in which they choose to do their major study. Unless specifically called for in the descriptions below, it is *not* necessary to designate on the application form the desire to be considered for a particular award (e.g., N.D.E.A. Title IV Fellowship, N.S.F. Traineeship) or to make inquiry separate from the application for admission. Applications for admission and award, along with all supporting documents, must be submitted on or before February 15. Notification of awards offered other than assistantships will be sent in late March. Late applications will be considered, should any vacancies occur in the list of appointees.

Further information and application forms may be obtained from the Dean of the Graduate School, Duke University.

Current Students

Students currently enrolled in the Graduate School who desire consideration for financial assistance in the ensuing academic year should make their desire known to the Director of Graduate Studies in their major department by filing in the Graduate School Office an Application for Graduate School Award. This application should be filed by February 15. Old students not currently enrolled who plan to resume their studies in the ensuing year and who wish consideration for an award should also file this application. Application forms are available in the Graduate School Office and in the department. Decisions are generally announced in late March.

Payments to Holders of Awards

Payment of stipends to graduate students holding awards begins approximately four weeks after the date of registration and will be made every four weeks thereafter. Award holders should inquire in their departments to ascertain the particular arrangements associated with their awards.

Fellowships

University Fellowships

University Fellowships funded by Duke University are available to students in the departments of the Graduate School for study during the academic year. Stipends range from $2400 to $3400. In 1967-68 forty graduate students held these Fellowships.

Endowed Fellowships

Special endowment funds make available approximately thirty James B. Duke Fellowships and one Angier B. Duke Memorial Fellowship with stipends (level I and II) of $4000, level III, $2800; one Ottis Green Foundation Fellowship in Humanities or Social Sciences of $2500; four Gurney Harriss Kearns Fellowships in Religion ranging up to $2800. Students are nominated for these Fellowships by their departments and selection is made by faculty committees.

Federal Fellowships and Traineeships

National Defense Education Act, Title IV Fellowships.** Duke University participates in this program, the purpose of which is to encourage and assist graduate students to prepare for careers as teachers in the nation's colleges and universities. The Fellowships are three-year awards, with academic year stipends of $2000, $2200, and $2400 in the three years, plus cost of tuition and non-refundable fees. Eligible dependents receive allowances of $400 for the academic year. Fellows choosing to study in the summer receive an additional stipend of $400, and a $100 allowance for eligible dependents. In 1967-68 there were 170 students holding these Fellowships. Nominations for these awards originate in the department of major study.

National Defense Education Act, Title VI Fellowships. The purpose of this program is to encourage persons to undertake advanced training in modern foreign languages and related area studies not commonly taught in the United States for the further purpose of developing nation-

**U.S. citizenship is generally a requirement for eligibility.

wide competence in such languages and the areas in which they are spoken. World areas in which National Defense Foreign Language Fellowships are offered at Duke University are South Asia and Eastern Europe. In addition to pursuing the normal work toward their degree, Fellows must engage during their tenure in intensive study in a language of the world area. The Fellowships carry academic year stipends of $2250, plus tuition and allowances of $600 for each eligible dependent up to four. In 1967-68, thirteen students at Duke University held NDFL Fellowships. Interested persons should obtain a separate application form from the Director of Graduate Studies in their major department.

National Science Foundation Graduate Traineeships. Through the National Science Foundation Duke University makes available Graduate Traineeships to outstanding students who intend to pursue studies in the biological, physical, and social sciences. Award benefits are stipends of $2400, first year level; $2600, intermediate level; and $2800, terminal year level, all for twelve-month tenure. Stipends are prorated if a nine-month tenure is chosen. Benefits also include tuition and dependent's allowances of $500. Twenty-eight students held Graduate Traineeships in 1967-68. Nominations for Traineeships originate in the department. A smaller number of Summer Traineeships are available to students who have been teaching assistants during the academic year.

United States Public Health Service Traineeships. Several departments, under training grants from the United States Public Health Service, offer Traineeships to outstanding students pursuing work toward the doctoral degree in the supported fields of study. Award benefits are generally comparable to those for N.S.F. Graduate Traineeships, but interested students should consult separate departmental announcements for details of the program. In 1967-68, 124 students held U.S.P.H.S. Traineeships.

Special Fellowships

Cokesbury Graduate Awards in College Teaching

These awards, sponsored by the Board of Education of the Methodist Church, are designed to assist graduate students who are committed to a Christian philosophy of higher education and who intend to teach in college. The applicant must have been a member of the Methodist Church for at least three years, and must have been accepted for or be currently pursuing a program of graduate studies at one of the Methodist-related universities, including Duke University, approved for this program. Awards, for one year, vary in amount from $600 to $2,500.

Application must be completed before February 15. For further information and application forms, apply to the Dean of the Graduate School.

Charles W. Hargitt Research Fellowship in Zoology

The Charles W. Hargitt Research Fellowship in Zoology is devoted to the promotion of research in the field of cellular studies. It may be awarded to post-doctoral candidates or established investigators who desire to engage in research and to outstanding predoctoral candidates in support of their graduate training. The recipient will be expected to engage in full-time research or training and will have no departmental duties. Research facilities will be provided. Appointment is for one year with the possibility of reappointment.

Inquiries and applications should be addressed to the Chairman, Hargitt Fellowship Committee, Department of Zoology.

Shell Fellowships

In African Studies. Two fellowships are available to qualified students in social sciences who are preparing for careers in the State Department, including the foreign services of the United States, the United Nations, or other international agencies, or in research and teaching in international affairs in academic institutions within the United States. They must be citizens of the United States or presently residing permanently in the United States and intending to become citizens. The fellowships are intended to cover the expenses of field research in the preparation of doctoral dissertations. The stipend for each fellowship is $4,000 plus a reasonable amount for transportation expenses. Inquiries should be made to the Executive Secretary, Commonwealth-Studies Center, Duke University.

Exchange Fellowships with the Free University of Berlin

Duke University has an exchange arrangement with the Free University of Berlin which will provide fellowships for two graduate students to work during the regular academic year in Berlin. Departments will submit nominations to the Dean of the Graduate School before February 15.

Apprentice Teaching Fellowships—English, History, Religion

Twelve second- or third-year graduate students—five in English, four in History, and three in Religion—may be granted two-year fellowships with an annual stipend of $2800 plus tuition. Appointment results from recommendation of the department and selection by a Graduate School committee. The fellowship involves carefully directed apprentice teaching. The funds are provided by the Danforth Foundation.

Fellowships and Graduate Scholarships in Forestry

Information regarding special fellowships and graduate scholarships in forestry may be obtained from the Dean of the School of Forestry, Duke University, Durham, North Carolina.

Scholarships

University Scholarships

University Scholarships funded by Duke University are available to students in the departments of the Graduate School for study during the academic year. Stipends range from $700-$2200. In 1967-68, ninety students held University Scholarships.

Summer Scholarships

A small number of Summer Scholarships ranging up to $300 are available to students who were engaged in full-time study during the academic year and wish to pursue full-time study during the Summer Session. Interested students should apply by letter to the Dean of the Graduate School.

Assistantships

Graduate Assistantships

Appointments as Graduate Assistants carry a total stipend in the range of $1000 to $3800 for the academic year. The value of stipend is determined by the fraction of time given to assisting, the qualifications of the assistant, and the nature of work assigned. In 1967-68, 115 students held Graduate Assistantships.

Research Assistantships

Appointments are for predoctoral candidates whose special training and qualifications enable them to serve as assistants to individual staff members in certain departments. Stipends range up to $3800, depending on the assisting time required. In 1967-68, 160 students held Research Assistantships.

Part-time Instruction

Several departments offering graduate work make use of exceptionally qualified graduate students as part-time instructors, tutors, and teaching

assistants. These students are usually able to register for a graduate program of 9 units a semester.

Loans

Interested students of good academic standing may apply for Duke University loans either under the National Defense Education Act or from Duke University sources. These loans usually bear lower rates of interest than commercial loans. Application should be made to Mr. W. O. Petty, Jr., 102B Allen Building, Duke University.

Because University loan funds are not large enough to handle the number of requests, students are encouraged to inquire concerning loan possibilities with the Higher Education Assistance Corporations in their home states, or with a lending institution near the student which may be a participant in the Federal Guaranteed Loan Program. Low interest loans under this program have provisions similar to those sponsored by the National Defense Education Act.

University Registration and Regulations

Registration

Who Must Register

(1) All students who enter course work or residence for credit; (2) all students who have completed minimum requirements for an advanced degree, but continue to use the facilities of the University in their research; (3) all students in *in absentia* status; (4) all students who wish merely to audit a course or courses.

Registration Periods

After the applicant has received notification of his admission to the Graduate School and has returned his statement of acceptance of admission, he may present himself for registration. During the registration periods, announced in the *Bulletin*, he first confers with the Director of Graduate Studies of his major department, who prepares and signs a course card, listing the course work to be taken during the semester. The student then presents this course card to registration officials, who enroll him officially in his courses. After his first registration period as a current student he will pre-register at the stated times for pre-registration.

Failure to pre-register incurs the penalty for late registration. *Former students* who intend to register to resume a degree program must give the Department and the Dean notice of this intention two months before registration.

Late Registration. All students are expected to register or pre-register at the times stated in the *Bulletin*. Those registering late, including those who are obliged to register *in absentia*, are subject to a *late registration fee of $5.00.*

Change of Registration. During the academic year within a period of *fourteen days* from the day of registration, registration may be changed with the approval of the Director of Graduate Studies if no reduction in fee is entailed, or, if fees are to be refunded, only with the approval of the Dean. A period of five weeks from the date of registration is provided for changes resulting from passing a preliminary examination. During the first thirty days from the registration date, the only permissible change is dropping course-seminar registration and adding equivalent units of research, with the approval of the Director of Graduate Studies, the instructor of the course, and the Dean.

Academic Regulations

*Residence**

Although ideally graduate study consists principally of individual reading, research, and laboratory experimentation under guidance, academic progress in the United States is generally measured and recorded in terms of course hours and credits. Credit for courses and seminars, research, and residence, and corresponding tuition and fees are stated in terms of units. According to conventional measurement, one unit is equivalent to one semester hour. The term *residence* designates full-time study and research in close proximity to the facilities provided, as opposed to part-time study incidental to a full-time occupation. For purposes of satisfying the residence requirement of the various degrees, *residence* of one year is defined as two successive academic semesters of *no less* than nine units registration each semester. (See p. 62 for *residence* required of master's candidates engaged solely in summer study.)

Course Load

A graduate student is considered fully registered when he enrolls for the maximum credit his program requires. Required registration is set in consideration of the student's obligation to teach or assist and the stage he has reached in fulfilling his degree requirements. In the *academic year* normal registration for the *resident doctoral student* who does not

*See also Requirements for Degrees, pp. 4-17.

hold an appointment as part-time instructor or assistant or does not engage in part-time work is 15 units a semester or 30 units an academic year. The normal registration for the *resident doctoral student* who holds such an appointment or undertakes such work is either 12 units or a minimum of 9 units, depending upon the number of hours a week he is required to devote to such duties. The *resident doctoral student* carries such normal registration through the semester in which he passes the preliminary examination. If he remains in residence, he continues to register for a minimum of 3 units a semester until the dissertation is accepted. If he elects to go out of residence, he registers for 1 unit a semester *in absentia* in order to keep his program active.

The *resident* student engaged in a *master's* program requiring a thesis registers as though he were a *resident doctoral student*. However, once he has completed all requirements except the thesis, he may reduce his registration to 3 units per semester. If he decides to go out of residence, he registers for 1 unit *in absentia*. Regulations pertaining to a *resident* student engaged in a *master's* program requiring no thesis are identical to those described above for the doctoral student until the semester in which his course requirements will be satisfied. At that point, he may reduce his registration to the number of hours necessary for completion of his degree program.

In the Summer Session 6 units a term is maximum registration. Students resident in the academic year who wish to continue study and use of University facilities including Summer Session Student Health during the summer must register for 1 unit in the first Summer Session term. This registration provides use of these facilities for both terms.

The registration of 1 unit a semester *in absentia* provides occasional consultation with the thesis or dissertation supervisor. It may be waived for military duty or serious problems of health. Every student is allowed two semesters of *in absentia* registration *without fee* provided that the student is a master's degree candidate who has completed his course and language requirements or is a doctoral candidate who has passed his preliminary examination. The student qualifying must register at the proper time each semester as "Leave of absence-without fee." The student who takes advantage of this provision while completing a master's program may not again claim it should he proceed into a doctoral program.

It is necessary to be a fully registered student according to the regulations listed above in order to establish eligibility for library carrel and laboratory space, for student housing, for University and some outside loans, for Student Health service (including the voluntary Walker plan coverage), and for reporting status for military duty.

Credits Earned Outside This Graduate School

(1) ***Graduate Credit Earned before the A.B. Degree Is Granted.*** Ordinarily no credit will be allowed for graduate courses taken before

a student has been awarded his A.B. or B.S. degree. However, an undergraduate student at Duke University who, at the beginning of his final semester, lacks no more than 9 semester hours of fulfilling the requirements for the A.B. or B.S. degree, may obtain permission from the Dean of the Graduate School to enroll for graduate courses sufficient to bring his total program to fifteen hours a week. Such graduate courses will be credited toward the A.M., M.S., M.Ed., or M.A.T. degree, provided that the student meets the requirements for admission to the Graduate School, and that he is duly registered in the Graduate School at the beginning of the semester in which he intends to earn graduate credit.

(2) ***Transfer of Graduate Credits.*** Credit for graduate course work earned at another institution will be determined only after a student has spent one semester at Duke University. After completing his first semester, the student through his Director of Graduate Studies should file a request that his credits be reviewed and a decision be made.

(3) ***Graduate Credit for Courses Taken in the School of Law.*** Upon the recommendation of the Director of Graduate Studies, and upon the approval of the Dean of the Graduate School, students in the social sciences may take certain courses in the School of Law for graduate credit. In some instances courses in the School of Law may be considered as fulfilling a student's requirements for a minor. To register for such courses, the student should present a letter from his Director of Graduate Studies to the Dean of the School of Law requesting permission to register for certain specified courses.

(4) ***Reciprocal Agreement with the Consolidated University of North Carolina.*** Under a plan of co-operation between the University of North Carolina and Duke University, students regularly enrolled in the Graduate Schools of the University of North Carolina during the regular academic year, and paying full fees to that institution, may be admitted to a maximum of two courses per semester in the Graduate School of Duke University upon payment of a nominal registration fee of two dollars and of any other special fees regularly required of all students. Under the same arrangements, students in the Graduate School of Duke University may be admitted to course work at the University of North Carolina. A similar arrangement is effective in the Summer Session. (See the *Summer Session Bulletin.*)

Grades

Grades in the Graduate School are as follows: *E*, *G*, *S*, *F*, and *I*. *E* (exceptional) is the highest mark. *G* (good) and *S* (satisfactory) are the remaining passing marks. *F* (failing) is below passing, and *I* (incomplete) indicates that some portion of the student's work is lacking, *for an acceptable reason*, at the time the grades are reported. The instructor who gives

an *I* for a course specifies the date by which the student must have made up the deficiency, in no case more than one calendar year from the date the course ended. If the course is not completed, the grade of *F* is entered upon the student's record unless his appeal to the Dean for the grade *No Credit* is approved. The grade of Z indicates satisfactory progress at the end of the first semester of a two-semester course. It will be changed to whatever grade is appropriate upon the completion of the course. A grade of *F* in a major course normally occasions withdrawal from a degree program not later than the end of the ensuing semester or term; a grade of *F* in a minor course occasions academic probation.

Courses Primarily for Undergraduates

Students granted provisional admission and others whose preparation is found deficient may on occasion be required as part of their program to take undergraduate courses as prerequisites to continued graduate study. Undergraduate courses thus taken and others elected by the student will carry no graduate credit.

In exceptional cases, 100-level courses *outside the major department* may be taken for graduate credit to a maximum of two one-semester courses or one year-course not exceeding a total of 8 units, when approved by the Directors of Graduate Studies in the major department and in the department in which the course is listed and by the supervisor of the program.

Withdrawal and Interruption of Program

From a Course. For permissible changes during the first thirty days after the registration date, see Change of Registration, page 54. If a course is dropped without the necessary approval, the permanent record will list the course as *Dropped Unofficially, F.* If a course is dropped after the thirty-day period, the status of the student at the time of withdrawal from the course will be determined and be indicated on the permanent record as *Withdrew Passing (W.P.) or Withdrew Failing (W.F.).*

From the Graduate School. The University reserves the right, and matriculation by the student is a concession of this right, to request the withdrawal of any student whose conduct at any time is not satisfactory to the University, even though no specific charge be made against the student. If a student wishes for any reason to withdraw from the Graduate School, he should notify both the Director of Graduate Studies in his major department and the Dean of the Graduate School prior to the date of his expected withdrawal. (For refunds upon withdrawal, see above, p. 44.) For withdrawal occasioned by academic failure, see above.

Students who find it necessary to interrupt their program of study for a period longer than a summer vacation should, before departure, leave

with the Graduate Office a statement of the reason for interruption, mailing address, and expected date of return. If they are subject to registration *in absentia,* they should arrange for such registration before departure.

A foreign student who after successfully completing a minimum of one semester's graduate study must withdraw for the purpose of returning home before the completion of a graduate program may with the approval of his major department request the Dean to issue him a Certificate of Graduate Study.

Size of Classes

Classes which carry graduate credit are limited in size to thirty students. In exceptional cases this regulation may be modified, but only by permission of the Executive Committee of the Graduate School Faculty on the recommendation of the department concerned. When graduate students are enrolled in senior-graduate courses numbered from 200 through 299, such courses may enroll no more than three juniors, who at the time of registration must have an overall B average. Beyond this limit may be enrolled a total of three juniors who have been granted Advanced Placement in the subject.

Language Requirements

Because a requirement for the A.M. degree is mastery of one acceptable foreign language, and for the Ph.D. is mastery of two, the prospective graduate student should attain mastery of at least one acceptable foreign language and preferably two before applying for admission. The facilities for graduate study are highly specialized and costly. The student who must lay them aside to acquire what he could have learned as an undergraduate is wasting his time.

To prevent delay in meeting this requirement, students whose programs call for mastery of French, Spanish, or German and who have studied the language must take the objective screening examination at their first registration period.

Acceptable Languages

The languages normally taken are French, German, and Russian. A student may substitute for any one of these another language which has a definite relation to the candidate's program of work for the degree and for which an examination can be provided. Individual departments are free to specify which languages they require, and they may require more than two.

Meeting the Requirements

Language requirements may be met before, during, or after first registration in the following ways:

Before First Registration. 1. *By ETS Scores.* Educational Testing Service Graduate School Foreign Languages tests in French, German, Russian, and Spanish are offered to undergraduate and graduate students at many centers including Duke University Counseling Center on nationally uniform dates. Scores on these tests taken elsewhere not more than five years before first registration here may be offered to meet the master's degree requirement of one language or the doctoral requirement of two.

2. *By Transcript.* With the permission of the Dean of the Graduate School and of the chairman of his program committee or of the Director of Graduate Studies, the *doctoral* student may file a transcript or other certification as evidence of having passed a comparable examination, other than an ETS test, at another graduate institution. The limitations are that (1) only one of the two doctoral requirements may be met in this way, (2) the other institution offers a doctoral program in the student's major and that the examination would have met a doctoral requirement there, and (3) the examination was passed no more than five years before first registration here.

At First Registration. On Monday of the fall registration period and on the day before spring registration, objective reading, grammar, and vocabulary tests in French, German and Spanish are offered (see the Calendar for hour and place). Any entering student in the master's or doctoral program may take them. On the basis of his scores the student will be (1) certified as meeting requirements in these languages, (2) advised after review to present himself for the ETS tests, or (3) advised to enroll in the special reading course (see below).

After First Registration. 1. Students who first registered in September 1964 and thereafter and who wish to be examined in French, German, Russian, or Spanish will take the ETS tests.

2. Students who began a program before September 1964 may take either the ETS tests or the locally-prepared reading tests in French, German, Russian, Spanish, and, upon request, Italian.

Reading examinations in other languages must be individually arranged, after approval of the language by the Dean. Each ETS examination requires a fee of $8. The student who requires a re-examination in the locally prepared reading examination at scheduled times will be charged $5 for each re-examination; if special times are necessary, the fee will be $10. Examinations at special times cannot be offered in French and Spanish.

Special Reading Courses

Special courses designed to assist graduate students in acquiring a

reading knowledge of French or German are offered for three hours a week, French during the fall semester and occasionally also in the spring, German during the spring semester and the Summer Session. A student who registers for either course must reduce his normal load of graduate courses by three units, with no reduction in fees. *No auditors* are permitted in these courses at any time. Undergraduates may not enroll during the academic year but may register, with permission of the Dean of the Graduate School, in the Summer Session if total registration permits.

Requirements for Foreign Students

Foreign students whose native language is not English are, during their first registration period, required to take a test for minimum competence in English (see p. 41). Such students, with the approval of the Director of Graduate Studies in their major department, may request permission of the Dean of the Graduate School to substitute English for the one foreign language required in the master's program or for one of the two in the doctoral program. If permission is granted, an additional advanced-level reading test in English will be arranged.

Conduct of Students

Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct.

The University wishes to emphasize its policy that all students are subject to the rules and regulations of the University as currently in effect or from time to time put into effect by the appropriate authorities of the University.

Any student, in accepting admission, indicates his willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the University.

Courses of Instruction

In general, courses with odd numbers are offered in the fall semester, those with even numbers in the spring semester. Double numbers separated by a hyphen indicate that the course is a year-course and must normally be continued throughout the year if credit is received. A student must secure written permission from the instructor in order to receive credit for either semester of a year-course. Double numbers separated by a comma indicate that although the course is a year-course, credit may be received for either semester without special permission. For a description of each course, consult the *Bulletin of the Graduate School of Arts and Sciences.*

Normally, courses which bear no date are offered every year; those marked with an asterisk are offered only when the need arises.

Note: In each department the number 399 is reserved to designate special (individual) readings in a specified area and supervised by a regular member of the Graduate staff, credit 1-3 units each registration, 9 units maximum in three successive registrations. The course is restricted to resident master's and doctoral programs, must have a completion exercise, and must carry a grade. When used it appears in this form: [Department] 399, Special Reading in [*area*], (*Instructor*), [*1 to 3*] units.

Anatomy

Professor Robertson, *Chairman* (401 Davison Building); Professor Buettner-Janusch, *Director of Graduate Studies* (Old Hospital Laundry); Professors Everett, Markee, Moses, and Peele; Associate Professors

Becker, Cuyler, and Duke; Assistant Professors Christian, Mahaley and Prost; Associates Bassett, Counce-Nicklas, and McMasters.

The Department of Anatomy offers graduate courses and training leading to the A.M. and Ph.D. degrees. Further information may be obtained from the Director of Graduate Studies of the department.

202. *Microscopic Anatomy.* Hours and credits (maximum 3 units) by arrangement. Prerequisite: adequate training in histology or cytology. Becker, Moses, and Robertson

203. *Anatomy of the Nervous System.* Hours and credits (maximum 3 units) by arrangement. Prerequisite: Gross Anatomy. Peele

204. Neuroanatomical Basis of Behavior. Restricted to graduate students with the equivalent of a major in psychology. (Sept.-Jan.) 3 units. Peele

206. *Anatomy of the Back and Extremities.* Prerequisite: core course in Anatomy or equivalent. 2 units. Markee, Duke, and Bassett

208. *Anatomy of the Trunk.* Prerequisite: core course in Anatomy. 4 units. Markee and Duke

216. *Anatomy of the Head.* Prerequisites: core course in Anatomy or the equivalent. 2 units. Markee and Duke

220. *Dissection of Restricted Regions.* Prerequisite: core course in Anatomy or equivalent. 1 to 3 units. Markee, Duke, and Bassett

231. *Physical Anthropology.* Prerequisite: general biology, genetics. 3 units. (Listed also as Anthropology 231.) Buettner-Janusch

232. *Human Genetics.* Prerequisites: Anatomy 231, Zoology 131 (or an elementary course in biology including genetics) or permission of instructor. 3 units. (Listed also as Zoology 232 and Genetics 232.) Buettner-Janusch

244. *Topics in Cell Structure and Function.* Prerequisite: Zoology 243 (Botany 243) or equivalent and permission of instructor. (1968 and alternate years) 2 units. (Listed also as Zoology 244.) Moses (Anatomy) and Nicklas (Zoology)

301. *Gross Human Anatomy.* Hours and credits (maximum 8 units) by arrangement. Prerequisite: adequate training in comparative anatomy and embryology. Markee, Everett, Becker, and Duke

312. *Research.* Credits to be arranged. Becker, Buettner-Janusch, Duke, Everett, Markee, Moses, Peele, Prost, and Robertson

313-314. *Anatomy Seminar.* Required of all candidates for the A.M. or Ph.D. degree. 2 units. Becker, Buettner-Janusch, Duke, Everett, Markee, Moses, Peele, Prost, and Robertson

340. *Advanced Microscopic Anatomy.* Prerequisite: Anatomy 202 or equivalent. 4 units. Becker, Moses, and Robertson

378. *Reproduction.* Admission with approval of instructor. 4 units. (1969 and alternate years). Everett (Anatomy) and Fellows (Physiology)

379. *Biophysical Cytology I.* Prerequisites: General Biology, Chemistry, Physics, Calculus. 3 units. Moses and Robertson

380. *Biophysical Cytology II.* Prerequisites: Microscopic Anatomy, Calculus, and one year each of General Biology, Physics, and General Chemistry. 3 units. Robertson

382. *Topics in Developmental Biology.* Prerequisites: a course in Embryology or permission of instructor. 3 units. Counce-Nicklas

Art

Professors Hall, Heckscher (*Chairman*), Markman, and Patrick; Adjunct Professor Bier; Associate Professor Sunderland

No graduate degree is offered in this department, but the following courses are suggested as possible minors for students majoring in anthropology, history, literature, philosophy, religion, psychology, or sociology, or in any other interested department.

217. *Aegean Art.* 2 units. Markman

218. *Early Greek Art.* 3 units. Markman

221-222. *History of Aesthetics.* 6 units. Patrick

233. *Early Mediaeval Architecture.* 3 units.* Sunderland

234. *Romanesque Sculpture.* 3 units.* Sunderland

239. *Architecture of Britain.* 3 units Hall

240. *Architecture of North America.* 3 units. Hall

241, 242. *Latin-American Art.* Open to seniors who have a reading knowledge of Spanish and/or have had courses in Latin-American history, economics, or literature. 6 units. Markman

249. *Pre-Columbian Art.* 3 units. Markman

251, 252. *Research.* Open to seniors by permission of the Director of Undergraduate Studies. 6 units. Heckscher

292. *Research Problems in the Collections of the North Carolina Museum of Art.* Students will meet once every week in the museum in Raleigh. 3 units.* Bier

Biochemistry

Professor Handler, *Chairman* (Medical Sciences Building); Professor Gross, *Director of the Genetics Division* (Medical Sciences Building); Associate Professor McCarty, *Director of Graduate Studies* (Medical Sciences Building); Professors Bernheim, Guild, Hill, Kamin, Tanford, Theirs, Wakil; Associate Professors Byrne, Fridovich, Harris, Kanfer, Kaufman, Kirshner, Lynn; Assistant Professors Greene, Hall, Harriman, Jones, Rajagopolan, Sage, Wheat; Associates Holloway, Joshi, and Masters

Graduate work in the Department of Biochemistry is offered leading to the Ph.D. degree. Preparation for such graduate study may take diverse forms. Undergraduate majors in chemistry, biology, mathematics, or physics are welcomed, but adequate preparation in chemistry is essential. Graduate specialization areas include protein structure and synthesis, enzyme action, and metabolism. The Division of Genetics of the Department, in cooperation with the University Program in Genetics (see page 86) offers Biochemistry students the opportunity to pursue advanced research and study to fulfill the requirements for the Ph.D. degree.

For Seniors and Graduates

203. *Chemistry of Natural Products.* Prerequisite: one year of organic chemistry; one year of physical chemistry also recommended. 2 units. Staff

204. *Introductory Genetics.* (Listed also as Genetics 204.) 3 units. Gross and Staff

S208. *Laboratory Methods in Biochemistry.* Prerequisite: Biochemistry 203, 303, and 308, or equivalent. 2 units. Staff

M212. *Biochemistry-Medical Sciences Seminar.* Designed for third-year medical students. Byrne and Staff

M241. *General Biochemistry.* Primarily for medical students. 4 units. Handler and Staff

248. *Introductory Biochemistry.* Prerequisites: Chemistry 151, one year of college physics (second semester may be concurrent), Mathematics 22, or consent of instructors. Course is acceptable in partial fulfillment of the departmental major requirements in biochemistry, botany, chemistry and zoology. (Listed also as Zoology 248.) 3 units. Wakil and Kirshner

250. *Biochemistry of Development.* 1 unit. McCarty and Harris

For Graduates

303. *Macromolecules.* Prerequisites: Physical chemistry equivalent to Chemistry 161-162. 4 units. Tanford and Hill

308. *Metabolism.* Prerequisites: Biochemistry 203 and 303, or permission of instructors. 5 units. Kamin and Staff

315. *Molecular Genetics.* Prerequisites: introductory courses in Biochemistry and Genetics. (Listed also as Genetics 315.) 3 units. Guild and Staff

345-346. *Biochemistry Seminar.* Required of all graduate students majoring in Biochemistry. 1 unit per semester. Sage

347-348. *Special Topics.* 1 or 2 units per semester. McCarty and Staff

351-352. *Genetics Seminar.* Required of all students specializing in

genetics. (Listed also as Genetics 351-352.) 1 unit per semester. Gross and Staff

M354. *Biochemistry of Disease.* Designed for third or fourth year medical students. Thiers and Staff

Botany

Professor Johnson, *Chairman* (354 Biological Sciences Building); Professors Anderson, Billings, Hellmers, Kramer, Naylor, Oosting, and Perry; Associate Professors Culberson, Philpott, Stone, and Wilbur, *Director of Graduate Studies* (265 Biological Sciences Building); Assistant Professors Searles and White

Graduate work in the Department of Botany is offered leading to the A.M. and Ph.D. degrees. Before undertaking graduate study in botany a student should have had in his undergraduate program at least 12 semester hours of botany beyond an elementary course, and related work in biological sciences. Some work in chemistry and physics will be desirable and, for some phases of botanical study, a necessity. Graduate Record Examination scores are required of all applicants. The student's graduate program is planned to provide a broad basic training in the various fields of botany, plus intensive specialization in the field of the research problem.

202. *Genetics.* Prerequisites: one year of botany, zoology, or equivalent, and one year of college mathematics. 4 units. (Offered in alternate years; listed also as Genetics 202.) Perry

205. *Anatomy.* Prerequisite: permission of instructor. 4 units. White

209. *Lichenology.* Prerequisite: two semesters of botany. 3 units. Culberson

210. *Bryology.* 3 units. Anderson

212. *Phycology.* 3 units. Searles

221. *Mycology.* Prerequisite: one year of biological science. 4 units. Johnson

225-226. *Special Problems.* Students with adequate training may do special work in the following: (1) Mycology and Plant Pathology, (2) Cytology, (3) Ecology, (4) Genetics, (5) Morphology and Anatomy of Higher Groups, (6) Morphology and Taxonomy of Lower Groups, (7) Physiology, (8) Taxonomy of Higher Groups, (9) Microbiology, (10) Experimental Taxonomy and Evolution, (11) Phycology. Credits to be arranged. All Members of the Graduate Staff

240. *Evolution.* Prerequisites: introductory biology and genetics, or consent of instructor. Cytology recommended. 3 units. Stone and Klopfer

242. *Systematics.* Prerequisite: permission of instructor. 4 units. Wilbur

243. *Cytology.* Prerequisite: one year of botany or zoology. (Listed also as Zoology 243.) 4 units. Anderson and Nicklas

245. *Morphology.* Prerequisite: permission of instructor. 4 units. Culberson

246. *Ecology.* Prerequisite: permission of instructor. 4 units. Billings

250. *Plant Biosystematics.* Prerequisite: Botany 52 and 55 and either 243 or a course in genetics or their equivalents. 3 units. Stone and White

251. *Physiology.* Prerequisite: permission of instructor. 3 units. Hellmers

252. *Plant Metabolism.* Prerequisite: Botany 151 or equivalent; organic chemistry recommended. 4 units. Naylor

254. *Plant-Water Relations.* Prerequisite: Botany 151 or equivalent. 3 units. Kramer

255. *Plant Systematics.* Prerequisite: Botany 52 or equivalent. 4 units. Wilbur

256. *Community Analysis and Classification.* Prerequisite: Botany 156 or equivalent. 3 units. Oosting

257. *Principles of Plant Distribution.* Prerequisite: Botany 156 or equivalent. 3 units. Billings

258. *Physiology of Growth and Development.* Prerequisites: Botany 151 or equivalent; organic chemistry recommended. 4 units. Naylor

259. *The Environment.* Prerequisite: Botany 156 or equivalent. 3 units. Billings

305. *Vegetation of North America.* Prerequisite: Botany 156 or equivalent. 3 units. Oosting

359-360. *Research in Botany.* Credits to be arranged. All Members of the Graduate Staff

Marine Laboratory

Four marine botany courses are given in the Duke University Marine Laboratory, Beaufort, N. C.; S205, Marine Microbiology; S207, Marine Mycology; S211, Marine Phycology; S220 Coastal Field Botany. (Not 1968).

Chemistry

Professor Bradsher, *Chairman* (115 Chemistry Building); Professor Quin, *Director of Graduate Studies* (05 Chemistry Building); Professors Brown, Hauser, Hill, Hobbs, Krigbaum, Poirier, Strobel, and Wilder; Associate Professors Chesnut, Jeffs, and Smith; Assistant Professors Henkens, Palmer, Toren and Wells; Adjunct Professor Peterlin

In the Department of Chemistry graduate work is offered leading to the A.M. and Ph.D. degrees. Before undertaking a graduate program in

chemistry, a student should have taken an undergraduate major in chemistry, along with related work in mathematics and physics.

Graduate courses in the department are designed to provide a broad basic training in the fields of inorganic, organic, analytical, and physical chemistry. An important requirement for the Ph.D. degree is the successful completion, under the direction of a member of the staff, of a research program leading to the solution of an original problem. The choice of the research problem, for either the A.M. or the Ph.D. degree, will determine the field of advanced specialization.

For Seniors and Graduates

216. *Nuclear Chemistry.* Prerequisites: introductory physics, analytical and organic chemistry. 3 units. Hill

217. *Inorganic Chemistry.* Prerequisite: one year of physical chemistry. 3 units. Wells

234. *Chemical Instrumentation.* Prerequisites: quantitative analysis and Physical Chemistry; the latter may be taken concurrently. 3 units. Strobel

235. *Advanced Analytical Chemistry.* Prerequisites: Chemistry 132 and 162. 3 units. Toren

252. *Advanced Organic Preparations.* Prerequisites: quantitative analysis and one year of organic chemistry. 3 units. Brown

253. *Intermediate Organic Chemistry.* Prerequisite: one year of organic chemistry. 3 units. Wilder

255. *Structural Analysis by Spectroscopic Methods.* 2 units. Jeffs

263. *Thermodynamics.* Prerequisite: one year of physical chemistry and one year of calculus. 3 units. Hobbs

267. *Introductory Quantum Chemistry.* 3 units. Chesnut

271. *Introduction to Research.* 1 unit. Brown

275, 276. *Research.* 1 to 6 units. All Members of the Graduate Staff

281. *Laboratory in Organic Chemistry.* Permission of Director of Graduate Studies required. 2 units. Quin

282. *Remedial Laboratory in Chemistry.* Permission of Director of Graduate Studies required. 1 unit. Toren

For Graduates

306. *Special Topics in Physical Chemistry.* Permission of instructor required for non-chemistry graduate students. 3 units. Hobbs

315. *Advanced Inorganic Chemistry.* Prerequisite: Chemistry 217. 3 units. Wells

317, 318. *Seminar in Inorganic Chemistry.* Prerequisite: Chemistry 217. 2 units. Hill, Palmer and Wells

331,332. *Seminar in Analytical Chemistry.* Prerequisites: Chemistry 234. 2 units. Strobel and Toren

350. *Organic Reactions.* Prerequisite: Chemistry 253. 2 units. Bradsher

352. *Mechanisms of Organic Reactions.* Prerequisites: Chemistry 253. 2 units. Hauser

354. *Stereochemistry.* Prerequisites: Chemistry 253 and 255. 2 units. Wilder (Not 1968-1969.)

355. *Special Topics in the Chemistry of Natural Products.* Prerequisites: Chemistry 255 and 354. 2 units. Jeffs

356. *Heterocyclic Chemistry.* 2 units. Quin

360. *Polymer Chemistry.* Prerequisite: Chemistry 263. 2 units. Krigbaum (Not 1968-1969)

361. *Advanced Polymer Chemistry.* Prerequisite: Chemistry 360. 2 units. Peterlin

362. *Kinetics of Chemical Reactions.* Prerequisite: Chemistry 263. 3 units. Smith

364. *Advanced Topics in Physical Chemistry.* Prerequisite: Chemistry 263. 2 units. Physical Chemistry Staff

365. *Introductory Statistical Mechanics.* Prerequisites: Chemistry 263 or 267. 3 units. Physical Chemistry Staff

366. *Statistical Mechanics.* Prerequisite: Chemistry 365; corequisite: Mathematics 285. 3 units. Poirier

368. *Quantum Mechanics.* Prerequisite: Chemistry 267; corequisite: Mathematics 285. 3 units. Chesnut (Not 1968-1969)

373, 374. *Seminar.* Required of all graduate students in chemistry. 2 units. All Members of the Graduate Staff

Classical Studies

Professor Richardson, *Chairman and Director of Graduate Studies* (312 Carr); Associate Professor Womble, *Acting Chairman* (320 Carr); Associate Professor Oates, *Acting Director of Graduate Studies* (325 Carr); Professors Newton, Truesdale, Willis; Assistant Professor Stanley

The Department of Classical Studies offers programs leading to the A.M. (and M.A.T.) and Ph.D. degrees with majors in Greek, Latin, and Ancient History and minors in Archaeology and Linguistics. For regular admission to a major in Greek or Latin a student must offer three years of college study above the elementary level in one language and two college years in the other. Students wishing to major in Ancient History will be required on entrance to demonstrate satisfactory competence in both Greek and Latin for reading in the primary sources; failure to demonstrate such competence will require modification of the student's program to repair deficiency.

The Department's special requirements of students in addition to the general requirements of the University for the A.M. set forth on pages

6-7 of this *Bulletin* and for the Ph.D. set forth on pages 12-16 of this *Bulletin* are presented in a sheet which may be obtained from the Director of Graduate Studies. They include for the A.M. a major and a minor field and for the Ph.D. a major and two minor fields, all to be chosen within the general discipline of Classical Studies; an Introductory Colloquium at entrance; a reading list; a comprehensive examination at the end of the first year of residence; and special requirements in seminar and course work and in the preliminary examination for the Ph.D. degree.

Greek

For Seniors and Graduates

209. *Euripides.* 3 units. Stanley
222. *Thucydides.* 3 units. Willis
231. *Hellenistic Poetry.* 3 units. Stanley
241. *Advanced Greek Composition.* 1 unit. Willis

For Graduates

301. *Greek Seminar I.* 3 units. Willis
311. *Papyrology.* 3 units. Oates

Latin

For Seniors and Graduates

202. *Roman Satire.* 3 units. Womble
207. *The Prose Epistle.* 3 units. Richardson
208. *The Epistle in Verse.* 3 units. Womble
209. *Fragments of Early Latin.* 3 units. Stanley
221. *Mediaeval Latin I.* 3 units. Newton
222. *Mediaeval Latin II.* 3 units. Newton

For Graduates

303. *Latin Seminar II.* 3 units. Richardson
304. *Latin Seminar III.* 3 units. Richardson

Classical Studies

For Graduates

301. *Introduction to Classical Philology.* 3 units. Willis and Graduate Staff

Classical Studies (Ancient History)

For Seniors and Graduates

255. *The Age of Pericles.* 3 units. Oates

256. *The Fourth Century through Alexander.* 3 units. Oates

257. *Social and Cultural History of the Hellenistic World from Alexander to Augustus.* This course will not be separately credited without Cl. St. 258. 3 units. Graduate Staff

258. *Social and Cultural History of the Graeco-Roman World.* Continues Cl. St. 257 and will not be separately credited. 3 units. Graduate Staff

For Graduates

322. *Seminar in Ancient History II.* 3 units. Graduate Staff

323. *Seminar in Ancient History III.* 3 units. Oates

Classical Studies (Archaeology)

For Seniors and Graduates

232. *Greek Painting.* 3 units. Stanley

235. *Roman Architecture.* 3 units. Richardson

For Graduates

311. *Archaeology Seminar I.* 3 units. Graduate Staff

Related Courses in Other Departments

Philosophy 217; Religion 217, 313, 316, 318.

Under the terms of a co-operative agreement, graduate students of Duke University may, with the approval of the chairman of their major department, take any graduate course offered by the Department of Greek and Latin of the University of North Carolina by the payment of a nominal fee. A list of these courses will be sent upon request.

Graduate students of Duke University may attend the American School of Classical Studies in Athens, Greece, without charge for tuition, and they are eligible to compete for the fellowships that are offered annually by the School. These consist of two fellowships in Greek archaeology, and one in the language, literature, and history of ancient Greece, each with a stipend of $2,000. They are awarded mainly on the basis of examination held in the beginning of February of each year. A somewhat similar connection exists with the American Academy in Rome.

Comparative Literature

No graduate degree is offered in Comparative Literature. The following courses may serve in the minor programs of students in other departments. Professor Salinger is Chairman of the Department of Germanic Languages and Literature.

201, 202. *Romanticism.* 6 units. Salinger

203, 204. *Realism and Symbolism.* 6 units. Salinger (Not 1968-1969)

205. *Foundations of Twentieth-Century European Literature.* 3 units.* Salinger

Slavic 236. *Russian and Polish Romanticism.* 3 units. Krynski

Economics

Professor Smith, *Chairman* (306 Social Science); Professor Yohe, *Director of Graduate Studies* (313 Social Science); Professors Davies, de Vyver, Hanna, McGee, Rottenberg, Saville, and Spengler; Visiting Professor Pfouts; Associate Professors Blackburn, De Alessi, Goodwin, Naylor, and Treml; Assistant Professors Clark, Condos, Finger, and Vernon

The Department of Economics offers graduate work leading to the A.M. and Ph.D. degrees. A student entering graduate work in economics should have completed with satisfactory grades at least 12 semester hours of undergraduate work in economics, including 6 hours of Principles of Economics. Among the undergraduate courses of distinct advantage to the graduate student in economics are General Accounting, Elementary Statistics, Intermediate Economic Theory, Money and Banking, International Trade, and basic courses in philosophy, mathematics, and social sciences other than economics.

Requirements for the Ph.D. in economics include a core of courses in Mathematical Economics, Statistical Methods, Micro- and Macroeconomic Theory, Economic History, and the History of Economic Thought. Economic Growth and Demography, Money and Banking, International Trade, Labor Economics, Public Finance, Industrial Organization, Statistics, and Econometrics are optional fields, of which the student elects at least two in preparation for the preliminary doctoral examination. Course requirements for the Ph.D., including a minor field, should be completed in four semesters of residence.

For Seniors and Graduates

233. *State and Local Finance.* 3 units.* Davies

237, 238. *Statistical Methods.* Prerequisite: Economics 138 or consent of the instructor. 6 units. Hanna

243. *Econometrics I.* 3 units. Naylor

244. *Econometrics II.* 3 units. Naylor

262. *Trade Unionism and Collective Bargaining.* 3 units.† de Vyver

265. *International Trade and Finance.* 3 units.† Finger

293. *Soviet Economic History.* 3 units.† Treml

294. *Soviet Economic System.* Prerequisite: Economics 293 or permission of instructor. 3 units.† Treml

301. *Economic Analysis.* 3 units. De Alessi

303. *Theory of Economic Decision-Making.* Prerequisite: Economics 301 or its equivalent. 3 units. De Alessi

304, 305. *Seminar in Money and Banking.* 3 units each. Yohe

307. *Quantitative Analysis, I.* 3 units. Naylor and Vernon

308. *Quantitative Analysis, II.* Prerequisite: Economics 307 or consent of instructor. 3 units. Naylor and Vernon

311. *History of Political Economy.* 3 units. Spengler and Goodwin

313, 314. *Seminar in Economic Theory.* Prerequisite: Economics 301 or its equivalent. 3 units each semester. Pfouts

316. *Seminar in Economic Functions of the State.* 3 units.

317. *Seminar in Demographic, Population, and Resource Problems.* 3 units. Spengler

318. *Dissertation Seminar.* 3 units. Staff

319. *Seminar in the Theory and the Problems of Economic Growth and Change.* 3 units. Rottenberg and Spengler

320. *Seminar in Trade Cycle, Employment, and Income Theory.* 3 units. Blackburn and Condos

321. *Theory of Quantitative Economic Policy.* Prerequisite: Economics 320. 3 units. Condos

329. *Federal Finance.* 3 units. Davies

330. *Seminar in Public Finance.* 3 units. Davies

331. *Seminar in Economic History.* 3 units. Smith

340. *National Income.* 3 units.* Hanna

355. *Seminar in Labor Economics.* 3 units. de Vyver

358. *Seminar in Labor Market and Related Analysis.* 3 units. Rottenberg

365. *Seminar in International Economics.* 3 units. Finger

366. *Monetary Aspects of International Trade and Finance.* 3 units. Clark

386. *Seminar in Latin-American Economic Problems.* 3 units.* Smith

388. *Industrial Organization.* 3 units.* McGee and Vernon

389. *Seminar in Industrial and Governmental Problems.* 3 units.* McGee

†Graduate students in Economics normally will not receive credit for courses so marked. These courses may be taken for credit by non-Economics graduate students, with the consent of the instructor.

401. *Seminar on the British Commonwealth.* 3 units. Spengler, Cole, and Preston

Related Courses in Other Departments

Courses comprising a candidate's minor may be selected from fields of forestry, history, mathematics, philosophy, political science, and sociology and anthropology, or from an area that complements the candidate's area of research interests in economics.

Education

Professor Cartwright, *Chairman* (08D West Duke Building); Professor Bolmeier, *Director of Graduate Studies* (08B West Duke Building); Professors Bowman, Githens, Hopkins, Hurlburt, Petty, Shuman, and Stumpf; Associate Professors Anastasiow, Ballantyne, Colver, Gehman, C. Johnson, Katzenmeyer, Martin, Spaulding, Sublett, and Weitz; Assistant Professors Carbone, Di Bona, and J. Johnson; Lecturer Engelhart

For Seniors and Graduates

Graduate work in Education is offered leading to the A.M., the M.Ed., the M.A.T., the Ed.D., and the Ph.D. degrees. For each of these degrees there are specific requirements and prerequisites, all of which may be found stated in detail in this *Bulletin*, pp. 6-17. Department requirements and prerequisites for all of these degrees may be obtained from the Director of Graduate Studies.

From the courses listed below, plus several in related disciplines, a selection may be made which will meet North Carolina requirements for the Advanced Principal's Certificate and the Superintendent's Certificate.

(Some courses below are offered only in the Summer Session; see the Summer Session *Bulletin.*)

These programs are accredited by the National Council for Accreditation of Teacher Education for the preparation of elementary and secondary school teachers and school service personnel with the Doctor's degree as the highest degree approved.

201. *Teaching and Supervision of Arithmetic.* 3 units. Petty

202. *Comparative and International Education: Industralized Nations.* 3 units. Di Bona

203. *Principles of School Administration.* 3 units. Hurlburt and Stumpf

204. *The School as an Institution.* 3 units. Martin

205. *Curriculum Problems in Secondary Education.* 3 units.* Cartwright

206. *Philosophical Analysis of Educational Concepts.* 3 units. Carbone

207. *Social History of Twentieth-Century American Education.* 3 units. C. Johnson

210. *Introduction to Educational Research.* 3 units. Stumpf, Katzenmeyer and Engelhart

211. *The Problem Child.* (Listed also as Psychology S211.) 3 units. Gehman

212. *Statistical Methods for Educational Research.* Prerequisite: Education 210 or its equivalent. 3 units. Engelhart

213. *Elementary-School Organization and Administration.* 3 units.* Stumpf and Sublett

215. *Secondary Education: Principles.* Must be accompanied by Education 216. 3 units. Cartwright, Githens, Hurlburt, Shuman, C. Johnson, and Sublett

216. *Secondary Education: Internship.* Full-time observation and teaching for half a semester, accompanied by Education 215; or, with permission of the Department, full-time teaching for a semester, accompanied by Education 315. 6 units. Cartwright, Githens, Hurlburt, Shuman, C. Johnson and Sublett

217. *The Psychological Principles of Education.* 3 units. Anastasiow, Gehman, Spaulding, and Weitz

223. *Teaching the Language Arts.* 3 units.

225. *The Teaching of History and the Social Studies.* 3 units. Cartwright

226. *Teaching Reading in the Elementary School.* 3 units. J. Johnson

232. *Supervision of Instruction.* 3 units.* Hurlburt

233. *Improvement of Instruction in English.* 3 units. Shuman

234. *Secondary-School Organization and Administration.* 3 units. Staff

236. *Teaching Reading in the Secondary School.* 3 units.

237. *The Teaching of Literature in Secondary Schools.* 3 units. Shuman

238. *Content, Supervision, and Administration of Reading Programs.* 3 units. J. Johnson

239. *The Teaching of Grammar, Composition, Mechanics and Usage in Secondary Schools.* 3 units. Bowman and Shuman

240. *Educational and Occupational Information.* 3 units.* Ballantyne and Colver

241. *Principles of Guidance.* Prerequisite: 6 hours of psychology or educational psychology. 3 units. Colver

242. *Measurement of Aptitudes, Interest, and Achievement.* Prerequisite: 12 hours of psychology or educational psychology (6 hours of which may be taken concurrently). 3 units.

243. *Personality Dynamics.* Prerequisite: 6 hours of psychology or educational psychology. 3 units. Gehman

244. *Counseling Techniques.* Prerequisites: Education 243 and 258 or equivalent, which may be taken concurrently. 3 units. Gehman

245. *Theories of Counseling.* 3 units. Weitz

246. *The Teaching of Mathematics.* 3 units. Reynolds

248. *Practicum in Counseling.* Prerequisite: Education 244. 3 units. Weitz

249. *Introduction to Exceptional Children.* 3 units. Stedman

250, 251. *Teaching Emotionally Disturbed Children: Internship.* 3 units each semester. Gehman

252. *The School in the Legal Structure.* 3 units.* Staff

253. *School Law.* 3 units. Staff

255. *Assessment of Abilities.* 3 units. Colver

258. *Educational Measurements.* Prerequisite: twelve semester hours in the Department, including a course in educational psychology. 3 units. Colver and Weitz

266. *Science in the Elementary School.* 3 units.* Githens

276. *The Teaching of High-School Science.* 3 units. Githens

285. *Audio-Visual Aids in Education.* 3 units.*

290. *Administration of School Property.* 3 units.* Stumpf

291. *Public and Community Relations of Schools.* 3 units. Stumpf

For Graduates

300. *Individual Assessment of Intelligence.* Prerequisite: Education 255. 3 units. Ballantyne

311. *Group Counseling.* Prerequisite: Education 244 and Education 245. Gehman

315. *Seminar in Secondary-School Teaching.* For students without previous internship credit, this course must be accompanied by Education 216. 3 units. Hurlburt

323. *Public School Finance.* 3 units.* Stumpf

333. *Seminar in Higher Education.* Permission of instructor required. 3 units. Hopkins

335-336. *Seminar in School Administration.* 3 units each semester. Hurlburt, Petty, and Stumpf

337. *Seminar in Community College Organization.* 3 units. Hurlburt

338. *Seminar in Educational Supervision.* Prerequisite: Education 232 or its equivalent. 3 units. Hurlburt

339. *Seminar in Curriculum.* 3 units. Cartwright and Sublett

340. *Seminar in Social Studies Curriculum.* 3 units. Cartwright

341. *Seminar in Elementary School Curriculum.* 3 units. Sublett

350, 351. *Directed Activities in School Administration.* Open only to school administrators. 3 units each semester. Hurlburt, Petty, and Stumpf

354. *Seminar in School Law.* Prerequisite: Education 253 or its equivalent. 3 units.* Staff



Engineering

James Lathrop Meriam, Ph.D., *Dean* (136 Engineering)

The School of Engineering offers programs of study and research leading to the degrees of Master of Science and Doctor of Philosophy with a major in civil, electrical, or mechanical engineering. These programs are designed to provide a fundamental understanding of the science of engineering, which is based on mathematics and the physical sciences, as well as a basic understanding of the art of engineering, which depends on human imagination and judgment. Each Engineering graduate student participates in seminars appropriate to his field of study.

A *minimum* of 30 units of earned graduate credit beyond the Bachelor's degree is required for the M.S. degree: 12 in engineering, 6 in related minor work (normally mathematics or natural science), 6 in either the major or minor subject or in other areas approved by the major department and the Dean of the School of Engineering, and 6 for a research-based thesis. There is no language requirement for this degree.

A *minimum* of 60 units of earned graduate credit beyond the Bachelor's degree is required for the Ph.D. degree: 24 in engineering, 12 in related minor work (normally mathematics or natural science), 12 in either the major or minor subject or other areas approved by the major department and the Dean of the School of Engineering, and 12 for a research-based dissertation. In addition, a reading knowledge of two foreign languages which are relevant to the field of the dissertation is required (normally two of the following: French, German, or Russian). The Directors of Graduate Studies will, during the first period of full-time registration of each doctoral aspirant, appoint a Program Advisory Committee consisting of three members of the Graduate faculty in areas relevant to the student's intended major. The preliminary examination may be either written, oral, or a combination of written and oral components, at the discretion of the Committee.

Civil Engineering

Associate Professor Hill, *Acting Chairman* (121 Engineering); Professor Vesić, *Director of Graduate Studies*; Professors Abeles (visiting), Brown, Bryan, McDonald (visiting), Meriam; Associate Professor Kumar; Assistant Professors Dvorak, Muga, and J. Wilson

A student may specialize in one of the following fields of study for either the M.S. or the Ph.D. degree with a major in Civil Engineering: engineering mechanics, hydraulic engineering, materials science, sanitary engineering, soil and foundation engineering, or structural engineering.

Appropriate combinations of these fields are also encouraged. Each graduate student participates in seminars appropriate to his field of study.

Under the Reciprocal Agreement with the Consolidated University of North Carolina, a student may include as a portion of the minimum requirements work offered by the Department of Environmental Sciences and Engineering of the University of North Carolina. Although minor work normally is taken in the natural sciences or mathematics, a student whose major interest relates to the social sciences may take relevant minor work in this area.

A minimum prerequisite to the graduate program in civil engineering is a basic knowledge of mathematics through linear differential equations, materials science, solid mechanics, and fluid mechanics.

CE 201. *Advanced Mechanics of Materials.* 3 units. Hill, McDonald

CE 202. *Experimental Mechanics.* 3 units. Hill

CE 204. *Plates and Shells.* Prerequisite: CE 201 or equivalent. 3 units. Hill

CE 205. *Elasticity.* Prerequisite: CE 201 or equivalent. 3 units. Dvorak, Hill, Meriam

CE 211. *Mechanical Behavior of Materials.* 3 units. Kumar

CE 212. *Structural Materials.* Prerequisite: CE 211. 3 units. Dvorak, Kumar

CE 221. *Incompressible Fluid Flow.* 3 units. Muga

CE 224. *Coastal and Tidal Hydraulics.* 3 units. Muga

CE 231. *Structural Engineering.* 3 units. Brown

CE 232. *Reinforced Concrete Design.* 3 units. Brown

CE 235. *Foundation Engineering.* 3 units. Vesić

CE 236. *Earth Structures.* 3 units. Vesić

CE 250. *Engineering Analysis.* 3 units. Wilson

CE 303. *Elastic Stability.* 3 units.

CE 304. *Advanced Plates and Shells.* Prerequisite: CE 204. 3 units. Hill

CE 305. *Advanced Elasticity.* Prerequisite: CE 205, Math 286. 3 units. Dvorak

CE 306. *Plasticity.* Prerequisite: CE 201. 3 units. Dvorak, Wilson

CE 307. *Viscoelasticity.* Prerequisite: CE 205 or equivalent. 3 units. Dvorak

CE 309. *Advanced Structural Dynamics.* Prerequisite: ME 203. 3 units. Wilson

CE 321. *Mechanics of Ideal Fluids.* Prerequisite: Mathematics 286 or equivalent. 3 units. Muga

CE 331, 332. *Advanced Structural Design and Analysis.* Prerequisite: CE 231 or equivalent. 6 units. Brown and Hill

CE 335. *Mechanical Behavior of Soils.* 4 units. Vesić

CE 336. *Advanced Soil Mechanics.* Prerequisite: CE 335. 4 units. Vesić

CE 337. *Elements of Soil Dynamics.* Prerequisite: CE 335 or consent of instructor. 3 units. Vesić

CE 365. *Advanced Topics in Civil Engineering.* 1 to 3 units. Members of the Graduate Staff

Electrical Engineering

Professor T. Wilson, *Chairman* (130 Engineering); Associate Professor Kerr, *Director of Graduate Studies* (108B Engineering); Professors Artley, Meier, and Owen; Associate Professors Burger (Adjunct), Pilkington, Thurstone, and Wells; Assistant Professors George, Hacker, Joines, and Nolte; Lecturer Trickey

A student may specialize in any one of the following fields in working toward either the M.S. or the Ph.D. degree with a major in Electrical Engineering: solid-state materials and devices; ferromagnetics; superconducting circuits; instrumentation; electronics; microwaves; computers and automatic control; energy conversion; information processing; and biomedical engineering.

A minimum prerequisite to the graduate courses in electrical engineering is a basic knowledge of differential equations, electric and magnetic field theory, and the theory of networks. A previous course in modern physics is recommended.

For Seniors and Graduates

EE 203. *Random Signals and Noise.* 3 units. Owen and Kerr

EE 204. *Information Theory and Communication Systems.* Prerequisite: 203. 3 units. Nolte

EE 205. *Signal Detection and Extraction Theory.* Prerequisite: EE 203 or permission of instructor. 3 units. Nolte

EE 206. *Switching and Logic Networks.* Prerequisite: permission of instructor. 3 units. George

EE 211. *Solid State Theory.* Prerequisite: permission of instructor. 3 units. Pilkington and Hacker

EE 212. *Solid State Materials.* Prerequisite: EE 211. 3 units. Hacker

EE 213. *Principles of Magnetism.* Prerequisite: EE 211 or permission of instructor. 3 units. Hacker

EE 215. *Semiconductor Physics.* Prerequisite: 211 or permission of instructor. 3 units. Hacker

EE 217. *Masers.* Prerequisite: permission of instructor. 3 units. George

EE 222. *Nonlinear Analysis.* Prerequisite: permission of instructor. 3 units. Wilson

EE 225. *Semiconductor Electronic Circuits.* Prerequisite: permission of instructor. 3 units. Owen and Joines

EE 227. *Network Synthesis.* Prerequisite: permission of instructor. 3 units. George

EE 241. *Linear Control Systems.* Prerequisite: permission of instructor. Credit not given for both EE 199 and EE 241. 3 units. Wells

EE 244. *Selected Topics in Control Systems.* Prerequisite: EE 203 and either EE 199 or EE 241. 3 units. Wells

EE 259. *Advanced Electric Energy Conversion.* Prerequisite: permission of instructor. 3 units. Trickey

EE 265. *Advanced Topics in Electrical Engineering.* Prerequisite: approval of the Director of Graduate Studies and of instructor under whom work will be done. 1 to 3 units. Staff

EE 271. *Electromagnetic Theory.* Prerequisite: permission of instructor. 3 units. Joines

EE 272. *Applications of Electromagnetic Theory.* Prerequisite: EE 271. 3 units. Joines

For Graduates

EE 304. *Advanced Statistical Analysis and System Design.* Prerequisite: EE 203. 3 units. Kerr

EE 311. *Quantum Theory of Materials.* Prerequisites: EE 211 and Physics 316. 3 units. Pilkington

EE 313. *Magnetic Processes in Materials.* Prerequisite: EE 213, or permission of instructor. 3 units. Artley

EE 315. *Semiconductor Devices.* Prerequisite: EE 215. 3 units. Hacker

EE 321. *Nonlinear Magnetic and Semiconductor Circuits.* Prerequisite: permission of instructor. 3 units. Wilson

EE 324. *Nonlinear Oscillations in Physical Systems.* Prerequisite: EE 222. 3 units. Wilson

EE 342. *Introduction to Optimal Control Theory.* Prerequisite: permission of instructor. 3 units. Kerr

EE 361, 362. *Electrical Engineering Seminar-Journal.* No graduate credit, but each graduate student must participate in the seminar for at least two semesters while in residence. Artley

EE 371. *Advanced Electromagnetic Theory.* Prerequisite: EE 272. 3 units. Artley

EE 373. *Selected Topics in Field Theory.* Prerequisite: EE 272. 3 units. Artley

EE 375. *Interaction of Electron Beams and Waves.* Prerequisite: EE 272. 3 units. George

EE 399. *Special Readings in Electrical Engineering.* Prerequisite: approval of Director of Graduate Studies. 1-3 units. Graduate Staff

Mechanical Engineering

Professor Chaddock, *Chairman and Director of Graduate Studies* (142A Engineering); Professors Kenyon, Linderoth, Macduff, Meriam and Pearsall; Associate Professors Elsevier, Harman, Mixon, and Murray; Assistant Professors Buzzard, Shepard, Werner, and Wright

Graduate study is available to students seeking the M.S. and Ph.D. degrees with a major in mechanical engineering. Emphasis is placed on advanced study, research and design in three primary areas: thermal and fluid systems, design and control of machines and processes, and the development of materials. The department also participates in two interdisciplinary areas of graduate instruction and research, namely, biomedical and oceanographic engineering. The program includes opportunities for advanced experimental work as well as theoretical study. Special emphasis is offered in the particular areas of heat and mass transfer, thermodynamics, high-speed transportation, hydrodynamics, compressible flow, vibrations, system response and control, refrigeration and cryogenics, nuclear engineering, mechanical design and the science of materials. Increasing emphasis is placed on developing the creative abilities of graduate students and on relating the work to the evolving needs of modern engineering practice.

ME 202. *Theoretical Thermodynamics.* 3 units. Kenyon and Harman

ME 203. *Introduction to Advanced Mechanics.* 3 units. Meriam

ME 211. *Theoretical and Applied Polymer Science.* 3 units. Pearsall

ME 221. *Compressible Fluid Flow.* 3 units. Harman and Buzzard

ME 222. *Heat Transfer.* 3 units. Chaddock and Kenyon

ME 231. *Systems Response and Control.* 3 units. Macduff and Wright

ME 233. *Fluid Control Systems.* 3 units. Macduff

ME 235. *Advanced Mechanical Vibrations.* 3 units. Macduff

ME 251. *Refrigeration and Cryogenics.* 3 units. Chaddock

ME 255. *Energy Conversion.* 3 units. Elsevier and Harman

ME 265. *Advanced Topics in Mechanical Engineering.* Prerequisites: approval of Director of Graduate Studies and of instructor under whom work will be done. 1 to 3 units. Graduate Staff

ME 270. *Theory of Lubrication and Bearing Design.* 3 units. Linderoth

ME 280. *Nuclear Reactor Power Cycles.* 3 units. Kenyon

ME 302. *Advanced Thermodynamics.* 3 units. Harman

ME 311. *Behavior of Crystalline Solids.* 3 units. Pearsall and Shepard

ME 322. *Mechanics of Viscous Fluids.* 3 units. Buzzard

ME 323. *Convective Heat Transfer.* Prerequisites: Math 285, ME 222 or equivalent. 3 units. Chaddock

ME 372. *Finite Element Techniques in Design.* 3 units. Macduff

(Complete course outlines are available for all of the above listed courses, except for the special topics course ME 265. The schedule for

offering of the courses is as follows: fall term—ME 202, 203, 231, and 321; spring term—ME 211, 221, 222, and 302; on sufficient demand—all others listed.)

English

Professor Ferguson, *Chairman* (323 Allen Building); Professor Nygard, *Director of Graduate Studies* (321 Allen Building); Professors Boyce, Budd, Duffey, Gohdes, Lievsay, Marshall, Patton, Reiss, Sanders, Smith, Stevenson, Turner, and Williams; Associate Professor Randall; Assistant Professors Strandberg and van Kluyve

The department offers graduate work leading to the A.M., M.A.T., and Ph.D. degrees. A statement of the requirements for the Ph.D. degree may be obtained from the Director of Graduate Studies.

For Seniors and Graduates

203. *Chaucer.* 3 units. Nygard, Reiss, and van Kluyve

207. *Old English Grammar and Readings.* 3 units. Professors Nygard and Reiss

208. *History of the English Language.* 3 units. Nygard and Reiss

209. *Present-Day English.* 3 units. Nygard and Reiss

213. *Introduction to Folklore.* 3 units. Nygard (Not 1968-1969)

215, 216. *Tudor and Stuart Drama, 1500-1642.* Randall

217. *Milton.* 3 units. Lievsay

218. *Spenser.* 3 units. Lievsay (Not 1968-1969)

219, 220. *The Eighteenth Century.* 6 units. Boyce and Ferguson

221, 222. *English Literature of the Early Nineteenth Century.* 6 units. Patton, Sanders, and Stevenson

223, 224. *English Literature of the Later Nineteenth Century.* 6 units. Sanders and Stevenson

227. Literary Criticism. 3 units. Lievsay

229, 230. *American Literature, 1800-1865.* 6 units. Turner and Budd

233, 234. *American Literature, 1865-1910.* 6 units. Gohdes

235, 236. *American Literature Since 1910.* 6 units. Duffey and Strandberg

237. *English Drama, 1642-1800.* 3 units. (Not 1968-1969)

239. *Shakespeare.* 3 units. Williams

244. *Literary Biography.* 3 units. Sanders (Not 1968-1969)

251, 252. *English Literature of the Seventeenth Century.* 6 units. Lievsay, Williams (251), and Randall (251)

261, 262. *English Literature of the Twentieth Century.* 6 units. Smith

264. *Major Developments in Contemporary American Poetry.* 3 units. (Not 1968-1969)

266. *Recent Critical Thought.* 3 units. Duffey
269, 270. *Southern Literature.* 6 units. Turner
277. *English Prose of the Sixteenth Century.* 3 units. Lievsay
278. *English Non-Dramatic Poetry of the Sixteenth Century.* 3 units. Lievsay

For Graduates

304. *Studies in the Metaphysical Poets.* 3 units. Lievsay
306. *Studies in Chaucer.* 3 units. Nygard
311. *Beowulf.* 3 units. Nygard
313. *The Traditional Ballad and Folksong.* 3 units. Nygard (Not 1968-1969)
315. *Middle English Literature.* 3 units. Nygard
320. *Medieval Romances.* 3 units. van Kluyve (Not 1968-1969)
322. *Studies in Twentieth-Century American Literature.* 3 units. Duffey and Gohdes
330. *Textual Criticism.* 3 units. Williams (Not 1968-1969)
331. *Emerson.* 3 units. Gohdes (Not 1968-1969)
332. *Whitman.* 3 units. Gohdes
333. *Hawthorne and Melville.* 3 units. Turner
334. *Studies in the Critical and Philosophical Ideas of Coleridge and Carlyle.* 3 units. Sanders (Not 1968-1969)
338. *Studies in American Realistic Fiction.* 3 units. Budd
339. *Studies in Shakespeare.* 3 units. Williams
340. *Studies in Renaissance English Prose.* 3 units. Lievsay (Not 1968-1969)
342. *Studies in Dryden and His Age.* 3 units. (Not 1968-1969)
345. *The Eighteenth-Century Novel.* 3 units. Boyce
346. *Studies in Swift.* 3 units. Ferguson
347. *Studies in Victorian Poetry.* 3 units. Stevenson
348. *Studies in Victorian Fiction.* 3 units. Stevenson
349. *Studies in Nineteenth-Century Nonfictional Prose.* 3 units. Sanders
363. *Studies in British Poetry of the Twentieth Century.* 3 units. Smith
374. *Studies in American Humor.* 3 units. Turner
378. *Samuel Johnson's Literary Criticism and Related Topics.* 3 units. Boyce (Not 1968-1969)

English for Foreign Students. A non-credit semester course in English for foreign students. Without fee for registered students who are permitted an audit without fee; otherwise a $5.00 fee.

Forestry

Professor Barnes, *Acting Chairman* (213 Biological Sciences Building); Professor Yoho, *Director of Graduate Studies* (104 Biological Sciences Building); Professors Anderson, Fluke, Johnson, Harrar, Kramer, Naylor, Osborne, and Ralston; Associate Professors Knoerr, Stambaugh, Sullivan, Woods and Yandle; Adjunct Associate Professors Kindle and Vukovich; Assistant Professor Braaten

Major and minor work is offered in the natural and social scientific aspects of forestry leading to the Master of Arts, Master of Science and Doctor of Philosophy degrees. Work for these degrees may be pursued in forest-tree physiology, wood anatomy and properties, forest pathology, silvics, forest soils, forest mensuration and biometry, forest entomology, forest economics, and forest climatology and hydrology. College graduates who have had specialized training in professional forestry or the related basic areas of the natural or social sciences may be considered for admission. Students may be restricted to the particular fields of specialization for which their academic background qualifies them. For information on professional training in forestry see *Bulletin of the School of Forestry.*

For Seniors and Graduates

203. *Forest Meteorology.* Prerequisite: one year of college physics; calculus desirable. 3 units. Knoerr

223. *Forest Pathology.* Prerequisites: Botany 1 and 2, or equivalent. 3 units. Stambaugh

230. *Forest Entomology.* 3 units. Anderson

243. *Forest Ecology.* Desirable prerequisites: plant physiology, plant ecology, and Forestry 261, or equivalents. 3 units. Woods

251. *Sampling Methods in Forestry.* Prerequisite: Forestry 151. 3 units.* Osborne

257. *Design of Forestry Experiments and Analysis of Data.* 3 units.* Braaten

258. *Operations Research.* 3 units. Braaten

261. *Forest Soils.* Prerequisites: Chemistry 1 and 2, and Physics 1, or equivalents; physical geology, mineralogy, petrology, and analytical chemistry also desirable. 3 units. Ralston

270. *Economics of Forestry.* Prerequisite: at least one course in the principles of economics. 3 units. Yoho

276. *Forestry Policy.* 2 units. Yoho

290. *Wood Anatomy.* Prerequisites: one year of biology, Forestry 241 or equivalent. 3 units. Sullivan

295. *Surface Generation in Wood.* Prerequisites: Forestry 290 or equivalent, calculus. 2 units. Sullivan

296. *Chemistry of Wood.* Prerequisites: Forestry 290 or equivalent, calculus, organic chemistry. 3 units. Sullivan

297. *Wood Physics (Mechanics).* Prerequisites: Forestry 290 or equivalent, calculus, college physics, statistics. 3 units. Sullivan

For Graduates

301, 302. *Advanced Studies in Forestry.* To meet individual needs of graduate students in the branches of forestry which are designated under Forestry 357, 358.

304. *Atmospheric Turbulence and Diffusion.* Prerequisites: Forestry 241 and differential equations or consent of instructor. 3 units. Vukovich and Kindle

305. *Forest Tree Metabolism.* Prerequisites: Forestry 201, and a course in biochemistry. 3 units. Barnes

306. *Dynamics of Local Atmospheric Motion.* Prerequisites: Forestry 241 and differential equations or consent of instructor. 3 units. Vukovich and Kindle (Not 1968-1969)

308. *Topics in Biometeorology.* Prerequisites: Forestry 241 or equivalent and permission of instructor. 3 units. Knoerr and Barnes (Not 1968-1969)

309, 310. *Biometeorology Seminar.* Prerequisite: permission of instructor. 2 units. Knoerr

321. *Research Techniques in Forest Pathology.* Prerequisite: Forestry 223 or equivalent. 3 units. Stambaugh

331. *Toxicology of Insecticides.* Prerequisites: one course in entomology; organic chemistry recommended. 3 units. Anderson

332. *Ecology of Forest Insects.* Prerequisite: Forestry 230 or equivalent. 3 units. Anderson

333. *Morphology and Taxonomy of Forest Insects.* Prerequisite: Forestry 230 or equivalent. 3 units. Anderson

342. *Forest Hydrology.* Prerequisite: one year of college physics; calculus desirable. 3 units. Knoerr

344. *Micrometeorology.* Prerequisite: Forestry 341; calculus desirable. 3 units. Knoerr

347, 348. *Seminar in Silvics.* 2 units. Woods

352. *Analysis of Forest Measurements.* Prerequisite: Forestry 250 or Mathematics 233 or equivalent. 3 units. Braaten

353. *Sampling and Experimental Design in Forestry.* Prerequisites: Forestry 250 or Mathematics 233 or equivalents. 3 units. Osborne (Not 1968-1969)

357, 358. *Research in Forestry.* Credits to be arranged. Students with adequate training may do research under direction of members of the faculty in the following branches of forestry: (1) *Silvics*; (2) *Forest Soils*; (5) *Forest Economics*; (6) *Properties of Wood*; (7) *Forest Mensuration*

and Biometry; (8) *Forest Entomology*; (11) *Physiology of Forest Trees*; (12) *Forest Pathology*; (13) *Forest Climatology and Hydrology*; (14) *Forest Biochemistry*. See *Bulletin of the School of Forestry* for prerequisites and staff.

362. *Forest Soil Physics.* Prerequisite: Forestry 261. 3 units. Ralston (Not 1968-1969)

366. *Forest Soil Fertility.* Prerequisites: Forestry 262 with analytical chemistry recommended. 3 units. Ralston

368. *Field Seminars.* Credits to be arranged.

378. *Seminar in Forest Economics.* Prerequisites: Forestry 270 and 379 or consent of the instructor; advanced courses in economics and economic theory are desirable. 2 units. Yoho

379. *Economic Analysis in Forestry.* Prerequisites: Forestry 270 or consent of instructor. 3 units. Yoho

390. *Wood-Liquid Surface Interactions.* Prerequisites: Forestry 296. 3 units. Sullivan

391. *Seminar in Wood Science and Forest Products.* 1 unit. Harrar and Sullivan

392. *Advanced Wood Physics.* Prerequisites: Forestry 296, 297, and 353. 3 units. Sullivan

Genetics, The University Program

Professor Gross, *Director* (Medical Sciences Building); Professors Buettner-Janusch, Guild, Perry; Associate Professors Gillham and Ward; Assistant Professors Hall and Harriman

The University Program in Genetics provides a coherent course of study in all facets of biology related to genetics. Graduate students registered in any of the biological sciences departments may apply to the faculty of the Genetics Program to pursue study and research leading to an advanced degree. It would be helpful if applicants for admission to the Graduate School indicated their interest in the Genetics Program at the time of application. Information describing more completely the research interests of the staff, facilities and special stipends and fellowships will be provided upon request.

For Seniors and Graduates

202. *Genetics.* Prerequisites: one year of botany, zoology, or equivalent, and one year of college mathematics. (Listed also as Botany 202; offered in alternate years.) 4 units. Perry

204. *Introductory Genetics.* (Listed also as Biochemistry 204.) 3 units. Gross and Staff

210. *Experimental Genetics.* (Listed also as Zoology 210.) Prerequisite: consent of instructor. 4 units. Ward and Staff

232. *Human Genetics.* (Listed also as Anatomy 232.) Prerequisites: Anatomy 231, Zoology 131 (or an elementary course in biology including genetics), or permission of instructor. 3 units. Buettner-Janusch

For Graduates

315. *Molecular Genetics.* (Listed also as Biochemistry 315.) Prerequisites: introductory courses in biochemistry and genetics. 3 units. Guild and Staff

351-352. *Genetics Seminar.* (Listed also as Biochemistry 351-352.) 1 unit each semester. Gross and Staff

Geology

Associate Professor Heron, *Acting Chairman and Director of Graduate Studies* (105 Science Building); Associate Professor Pilkey; Assistant Professor Lynts

The Department of Geology offers graduate work leading to the A.M. degree. An undergraduate degree in geology is not a prerequisite for graduate studies, but a student must have had or must take introductory courses in field geology, mineralogy, sedimentary rocks, stratigraphy, paleontology, and structural geology. In addition he must have had one year of college chemistry, one year of college physics, and mathematics through calculus.

Graduate courses in the Department of Geology are designed to provide training in the field of environmental sedimentary geology with specialized training in bio-environments, litho-environments, or modern environments.

An acceptable thesis is required.

For Seniors and Graduates

203. *Advanced Stratigraphy.* Prerequisites: Geology 143 or consent of instructor. Given biennially. 3 units.

205. *Geological Oceanography.* Not open to students who have completed Geology 206. 6 units. (Given at Beaufort only.) Pilkey

206. *Principles of Geological Oceanography.* Prerequisites: Geology 207 or consent of instructor. 3 units. Pilkey

207. *Sedimentary Petrography.* Prerequisites: Geology 108 or consent of instructor. 3 units. Heron

222. *Sedimentary Minerals.* Prerequisites: Geology 102 or consent of instructor. 3 units. Heron

235. *Sedimentary Geochemistry.* Prerequisites: Geology 102 or consent of instructor. 3 units. Pilkey

241-242. *Invertebrate Paleontology.* Prerequisites: Geology 51, 52, or consent of instructor. (Given biennially.) 6 units. Lynts

243-244. *Micropaleontology.* Prerequisites: Geology 242, or consent of instructor. (Given biennially.) 6 units. Lynts

247. *Paleoecology.* Prerequisites: Geology 207, 242, or consent of instructor. 3 units. (Given biennially.) Lynts

251. *Geomathematics.* Prerequisites: Geology 51, 52, Mathematics 22, or consent of instructor. 3 units. (Given biennially.) Lynts

For Graduates

305. *Physical Environments Seminar.* 3 units.* Pilkey

306. *Bio-Environments Seminar.* 3 units.*

340. *Paleontology Seminar.* Prerequisites: consent of instructor. 1 unit.* Lynts

371, 372. *Advanced Topics in Geology.* 1 to 3 units. Graduate Staff

Related Courses in Other Departments

Courses comprising a candidate's minor may be selected from the fields of zoology, physics, mathematics, chemistry, or approved courses offered in the Department of Geology at the University of North Carolina at Chapel Hill.

Germanic Languages and Literature

Professor Salinger, *Chairman and Director of Graduate Studies* (106 Foreign Languages); Professor Phelps and Visiting Professor Friederich; Assistant Professors Alt and Boletta; Visiting Lecturer Arnoldner

The Department of Germanic Languages and Literature offers graduate work leading to the A.M. degree. Students who expect to major in German should have had sufficient undergraduate courses in Germanic languages to enable them to proceed to more advanced work.

Students who wish to take courses in German for a minor should normally have completed a third-year course (in exceptional cases, a second-year) of college German with acceptable grades.

For Seniors and Graduates

201, 202. *Goethe.* 6 units.* Phelps and Salinger

203, 204. *Eighteenth Century.* 6 units. Phelps

205, 206. *Middle High German.* 6 units.* Boletta

207, 208. *German Romanticism.* 6 units.*

209, 210. *Kleist, Grillparzer, and Hebbel.* 6 units.* Alt and Salinger
211, 212. *Heinrich Heine.* 6 units.* Salinger
213. *Nineteenth-Century Literature.* 3 units. Alt (Not 1968-1969)
214. *The Twentieth Century.* 3 units. (Not 1968-1969)
215. *Seventeenth-Century Literature.* 3 units.* Friederich
216. *History of the German Language.* 3 units. Boletta
217. *Renaissance and Reformation Literature.* 3 units.*
218. *The Teaching of German.* 3 units.* Phelps
230. *German Cultural History.* 3 units.*
232. *Bibliography and Methods.* 3 units.*
233. *Advanced Composition.* 3 units.*

For Graduates

316. *The Austrian Novel from 1930 to the Present.* 3 units.* Salinger
—. *Graduate Reading Course.* No credit.

Related Courses in Other Departments

The following courses in other departments are recommended to students who are majoring in Germanics, as particularly valuable in building a proper background for Germanic studies:

(a) Graduate courses in foreign or comparative literature or philology, offered by the ancient and modern language departments, to be selected after consultation with the Germanic Languages Department.

(b) Graduate courses in history and philosophy, offered by those departments, to be selected after consultation with the Germanic Langauges Department.

History

Professor Colton, *Chairman* (235 Allen); Professor Durden, *Director of Graduate Studies* (230 Allen); Professors Alden, Crane. Curtiss, Ferguson, Hamilton, Hillerbrand, Holley, Lanning, Parker, Preston, Ropp, Watson, and Woody; Associate Professors Acomb, Davis, Gillin, Hollyday, Lerner, A. Scott, W. Scott, Silberman, TePaske, and Young; Assistant Professors Ginter and Mauskopf

The Department of History offers graduate work leading to the A.M. and the Ph.D. degrees. A candidate for the degree of Doctor of Philosophy is required to prepare himself for examination in four fields, of which three shall normally be within history and of which one must be in American history or in the history of Western Europe. The choice and delimitation of fields is determined in consultation with his supervisor and the Director of Graduate Studies. The Department offers graduate instruction in Ancient History; Medieval Europe; Modern Europe; Ameri-

can History; England and the Commonwealth; Russia; Latin America; the Far East in the modern period; South Asia in the modern period; military history; and historiography.

Students may receive credit for either semester of a hyphenated course without taking the other semester if they obtain written permission from the instructor and the Director of Graduate Studies.

For Seniors and Graduates

201-202. *The History of Russia, 1801-1917.* 6 units. Curtiss

203-204. *The United States, 1850-1900.* 6 units. Woody

209-210. *Constitutional History of the United States, 1760 to the Present.* 6 units.

212. *Recent Interpretations of United States History.* 3 units. Watson

213-214. *The Old South.* 6 units. Woody

221-222. *The Age of the Renaissance.* 6 units.

223-224. *The Old Regime and the French Revolution, 1661-1815.* 6 units. Acomb

225, 226. *The Age of the Reformation and Counter-Reformation.* (Listed also as Religion 250, 251.) 6 units. Hillerbrand

229. *Recent Interpretations of Modern European History.* 3 units. Parker

231-232. *The Hispanic Colonies and Republics in America.* 6 units. Lanning

233-234. *The Institutional, Cultural, and Social History of Hispanic America.* 6 units. Lanning

247. *The History of Modern India and Pakistan, 1757-1857.* 3 units. Crane

248. *The History of Modern India and Pakistan, 1857-1947.* 3 units. Crane

249-250. *Social and Intellectual History of the United States.* 6 units. Holley

263-264. *American Colonial History and the Revolution, 1607-1789.* 6 units. Alden

265-266. *Modern South America.* 6 units. TePaske

269. *British History, 1688-1867.* 3 units. Hamilton

270. *British History from Mid-Nineteenth Century.* 3 units. Hamilton

273, 274. *Topics in the History of Science.* 6 units. Mauskopf

275-276. *Central Europe, 1849-1914.* 6 units. Hollyday

277-278. *Reform and Politics in Nineteenth-Century United States.* 6 units. Durden

285. *Origins of Indian Civilization.* (Listed also as Religion 285.) 3 units. Sullivan

287-288. *History of Modern Japan.* 6 units. Silberman

297. *The British Empire in the Nineteenth Century (From 1783).* 3 units. Preston

298. *The Commonwealth in the Twentieth Century.* 3 units. Preston

For courses in Ancient History which may be taken for credit in either History or Classical Studies, see Classical Studies 253—*Greece to the Orientalizing Period*; 254—*The Age of the Tyrants and the Persian Wars*; 255—*The Age of Pericles*; 256—*The Fourth Century through Alexander*; 257—*Social and Cultural History of the Hellenistic World from Alexander to Augustus*; 258—*Social and Cultural History of the Graeco-Roman World.*

For Graduates

303-304. *The United States in the Twentieth Century.* 6 units. Watson

305-306. *Seminar in British History.* 6 units. Ferguson and Hamilton

307-308. *Seminar in United States History.* 6 units. Davis, Durden, Holley, and Watson

309-310. *Seminar in American Colonial and Revolutionary History.* 6 units. Alden

315-316. *Seminar in Southern History.* 6 units. Woody

317-318. *Seminar in the History of Western Europe.* 6 units. Colton, Parker, and Scott

321-322. *Seminar in the History of Spain, Hispanic America, and Inter-American Relations.* 6 units. Lanning

337-338. *Seminar in Medieval History.* 6 units. Young

343-344. *Seminar in the History of American Foreign Relations.* 6 units.

347-348. *Seminar in Recent India.* 6 units. Crane

353-354. *Seminar on the Second British Empire and the Commonwealth of Nations.* 6 units. Preston

361-362. *Seminar in the History of Russia.* 6 units. Curtiss

371-372. *Research Seminars.* Offered in conjunction with colloquia listed below. 6 units.

401. *Seminar on the British Commonwealth.* 3 units. Cole, Preston, and Spengler

Colloquia for Graduates

Each colloquium described below deals with an aspect of history by means of readings, oral and written reports, and discussion, with attention to bibliography. In some instances, students may take the equivalent of a research seminar in conjunction with the colloquium and will be credited with an additional 6 units by registering for **371.1-372.1, etc.**

351.1-352.1. *Military History.* 6 units. Ropp

351.2-252.2. *Modern European Intellectual and Cultural History.* 6 units. Parker

351.10-352.10. *Medieval Europe.* 6 units. Young

351.15-352.15. *The English Renaissance.* 6 units. Ferguson

351.18-352.18. *England, 1660-1832.* 6 units. Ginter

351.25-352.25. *Central Europe, 1849-1914.* 6 units. Hollyday

351.30-352.30. *European Diplomatic History since 1870.* 6 units. W. Scott

351.31-352.31. *Twentieth-Century Europe.* 6 units. Colton

351.40-352.40. *City and Frontier in United States History.* 6 units. A. Scott

351.45-352.45. *Reform and Politics in Nineteenth-Century United States.* 6 units. Durden

351.46-352.46. *Twentieth-Century United States.* 6 units. Watson

351.47-352.47. *United States Diplomatic History.* 6 units. Davis

351.60-352.60. *Soviet History.* 6 units. Lerner

351.65-352.65. *Nationalism and Communism in China.* 6 units. Gillin

351.70-352.70. *Recent South Asia.* 6 units.

Historiography and the Teaching of History

For Graduates

312. *Seminar in the Teaching of History in College.* Required of all Ph.D. candidates who are in residence as many as two years. Year course. 2 units. Holley and Watson

314. *Historical and Social Science Methodology.* Year course. 6 units. Ginter

320. *Historiography.* A study of the great historians from Herodotus to Henry Adams and of the new social science and humanities approaches to history. Year course. 4 units. Parker

History 314 or History 320 is required of all Ph.D. candidates who are in residence as many as two years.

Hospital Administration

Professor Frenzel, *Program Director* (234-B Baker House); Associate Professor Swanson; Assistant Professor Smith, *Coordinator of Graduate Studies* (234-B Baker House)

Graduate study leading toward preparation for a career of administration in hospitals and other health agencies is offered through a 24-month program leading to the M.H.A. degree. The program in Hospital Administration is composed of 36 graduate units, of which 18 are in Hospital Administration and 18 are in designated courses in Economics, Political Science, and Sociology. Included in the program is a 12-month administrative residency, a period of supervised administrative experience conducted under faculty supervision in hospitals and other health agencies located within commuting distance of the University campus. Admission

to this program is limited to 16 students per year; selection is based on suitability for management of health agencies as well as on capability for graduate study. As there are requirements for participation in the program in Hospital Administration in addition to basic admission requirements of the Graduate School, interested individuals should obtain complete information on prerequisites and selection procedures from the Coordinator of Graduate Studies.

201. *History and Development of Hospitals and Other Health Agencies.* 3 units. Smith

203-204. *Principles of Organization and Management of Hospitals and Other Health Agencies.* 6 units. Frenzel, Swanson, and Smith

211-212. *Seminars in Health Administration.* 6 units. Staff and Preceptors

215. *Administrative Residency (1 calendar year).* 3 units. Staff and Preceptors

Mathematics

Professor Roberts, *Chairman* (135C Physics Building); Professor Warner, *Director of Graduate Studies* (135D Physics Building); Professors Carlitz, Dressel, Elliott, Gallie, Murray, Shoenfield, and Woodbury; Associate Professors Bryson, Burlak, Reynolds, Weisfeld, and Williams; Assistant Professors Baxley, Burdick, Caviness, Herr, Hodel, Kitchen, Moore, O'Fallon, Patrick, Scoville, Smith, and Stackelberg; Adjunct Professor Sewell

Graduate work in the Department of Mathematics is offered leading to the A.M. and Ph.D. degrees. The student, in his undergraduate work, must have had courses in differential and integral calculus, and at least 6 semester hours of other courses in mathematics on the junior or senior level.

The A.M. degree with a major in mathematics is awarded primarily on the basis of scholarship. Of the 24 units of course work required for this degree, 18 units must be taken in the Department of Mathematics.

The Ph.D. degree in mathematics is awarded upon the demonstration of ability and training in research. The original dissertation, therefore, is the most important of the formal requirements for the degree.

Since a reading knowledge of French, German, and Russian is highly desirable for the student of mathematics, he should satisfy the language requirements in two of these languages as early as possible.

204. *Geometry for Teachers.* 3 units. Reynolds

217-218. *Intermediate Analysis.* Prerequisite: Mathematics 63 for 217; and 217 for 218. 6 units. Stackelberg

221-222. *Numerical Analysis.* 6 units. Patrick

227-228. *Theory of Numbers.* Prerequisite: Calculus. 6 units. Carlitz (Not 1968-1969)

229-230. *Algebraic Numbers.* Prerequisite: theory of equations. 6 units. Carlitz (Not 1968-1969)

234. *Sample Designs.* Prerequisite: Mathematics 133. 3 units. Bryson

235-236. *Abstract Algebra.* Prerequisites: Mathematics 114, or consent of the instructor. 6 units. Weisfeld

244. *Design of Experiments.* Prerequisite: Mathematics 233. 3 units.* Burdick

245-246. *Combinatorial Analysis.* Prerequisite: calculus. 6 units. Carlitz (Not 1968-1969)

247-248. *Arithmetic of Polynomials.* Prerequisite: Mathematics 236, or consent of the instructor. 6 units. Carlitz (Not 1968-1969)

262. *Non-Parametric Statistics.* Prerequisite: Mathematics 244, or consent of the instructor. 3 units.* Bryson

271-272. *Introductory Topology.* Prerequisite: calculus. 6 units. Hodel

275-276. *Probability.* Prerequisite: Mathematics 135; or calculus and consent of the instructor. 6 units.* Stackelberg

283. *Applied Mathematical Statistics.* Prerequisite: Mathematics 64. 3 units. Burdick

284. *Least Squares Analysis of Linear Models.* Prerequisites: Mathematics 136 or 283. 3 units. Burdick

285. *Applied Mathematical Methods I.* Prerequisite: Mathematics 63. 3 units. Dressel

286. *Applied Mathematical Methods II.* Prerequisite: Mathematics 63. 3 units. Dressel

287-288. *Foundations of Mathematics.* Prerequisite: Mathematics 114 or Philosophy 103, or consent of instructor. 6 units. Shoenfield (Not 1968-1969)

289. *Applications of Stochastic Processes I.* Prerequisites: Mathematics 135 and 140, or consent of instructor. 3 units. Williams (Not 1968-1969)

290. *Applications of Stochastic Processes II.* Prerequisite: Mathematics 289, or consent of instructor. 3 units. Williams (Not 1968-1969)

291-292. *Analysis I, II.* Prerequisite: Mathematics 218 or 140, or consent of instructor. 6 units. Burlak

297-298. *Axiomatic Set Theory.* Prerequisite: consent of instructor. 6 units. Shoenfield

For Graduates

303-304. *Advanced Theory of Numbers.* Prerequisite: Mathematics 228, or consent of instructor. 6 units. Carlitz

325-326. *Analysis III, IV.* Prerequisite: Mathematics 292 for 325; and 325 for 326. 6 units. Scoville

327-328. *Partial Differential Equations.* Prerequisite: Mathematics 291-292, or consent of instructor. 6 units.* Burlak

329-330. *Theory of Distributions.* 6 units.* Burlak

333-334. *Analytic Theory of Numbers.* Prerequisite: Mathematics 291-292. 6 units. Carlitz (Not 1968-1969)

335-336. *Topics in Algebra.* Prerequisite: Mathematics 236, or consent of instructor. 6 units.* Smith

343-344. *Ordinary Differential Equations.* Prerequisite: Mathematics 291-292. 6 units.* Staff

353-354. *Topics in Analysis.* Prerequisite: Mathematics 325, which may be taken concurrently. 6 units. Burlak

371-372. *Dimension Theory.* Prerequisite: Mathematics 271-272. 6 units.* Roberts

383-384. *Lie Groups and Algebras.* Prerequisites: Mathematics 236, 271, and either Mathematics 218 or 291. 6 units.* Shoenfield

M385. *Mathematics of Physiological Systems.* Prerequisite: consent of instructors. 3 units. Moore and Woodbury

395-396. *Topological Algebra.* Prerequisites: Mathematics 236 and 292, or consent of instructor. 6 units.* Warner

397-398. *Seminar in Algebra and Number Theory.* Prerequisite: consent of instructor. 6 units. Carlitz

Microbiology and Immunology

Professor Conant, *Chairman* (321 Bell Building); Professor Day, *Director of Graduate Studies* (4546 Gerontology Building); Professors Amos, Beard, Larsh, Rundles, Smith, and Willett; Associate Professors Burns, Metzgar, Osterhout, Wheat, and Zmijewski; Assistant Professors Boyle and Nielsen

The Department offers a Ph.D. degree in Microbiology (which embraces Immunology). A brochure may be requested from the Director of Graduate Studies, Box 3045, Duke Medical Center, which describes the degree program, the special requirements, and the fellowships available. Prerequisites for admission include adequate preparation in the physical as well as biological sciences.

For Seniors and Graduates

201. *Advanced Microbiology.* Prerequisites: organic chemistry or biochemistry. 3 units. Wheat

M211. *Hematology.* Prerequisites: courses in general zoology, general botany, histology, and comparative anatomy. 4 units. (Spring quarter.) Rundles

M221. *Medical Microbiology.* Prerequisites: courses in general zoology,

general botany, histology and comparative anatomy, general and organic chemistry. 4 units. (Spring semester.) Amos, Beard, Conant, Day, D. T. Smith, Willett; Burns, Metzgar, Osterhout, Wheat, Zmijewski, Boyle and Nielsen

225. *Fundamentals of Mycology.* 2 units. Nielsen

231. *Fundamentals of Immunology.* 2 units. Boyle

For Graduates

310. *Microbial Physiology.* Prerequisite: Biochemistry 201 or equivalent. 3 units. (Spring, alternate years) Burns

312. *Tissue Immunology.* Prerequisite: Microbiology 231. 2 units. Day

313. *Immunohematology.* 2 units. Zmijewski

314. *Immunochemistry.* Prerequisites: Fundamentals of Immunology or Biochemistry or Physical Chemistry or consent of instructor. 2 units. Day

316. *Immunogenetics.* 2 units. Amos

323. *Readings in Bacteriology and Immunology.* Prerequisites: Bacteriology and Immunology, M221. 4 units per semester. Smith

324. *Research Seminar on Viruses.* Limited to advanced students. 2 units per semester. Beard

325. *Medical Mycology.* Prerequisites: A.M. in Botany with major in mycology and M221. 4 units per semester. Conant

326-327. *Microbiology Seminar.* Required of all candidates for the A.M. or Ph.D. degree. 2 units. Staff

328. *Seminar in Immunology.* 1 unit. Staff

Pathology

Professor Kinney, *Chairman* (301B Medical School); Professor Trump, *Director of Graduate Studies* (301 Medical School); Professors Fetter, Hackel, Vazquez, and Vogel; Associate Professors Elchlepp, Rowlands, Sommer, and Wittels; Assistant Professors Burkholder and Sage

The Department of Pathology offers graduate work leading to the Ph.D. degree with areas of specialization such as subcellular and molecular pathology, immunopathology, and neuropathology. Course work is designed to give a broad background in classical and modern pathology with emphasis on the application of biophysical, biomathematical and biochemical approaches. Students will be required to take such courses as are necessary to obtain this foundation. In general, students will be required to take course work that is best adapted to areas of specialty and research. Further information including brochures giving details about the departmental facilities, staff, trainee stipends and the M.D.-Ph.D. program are available from the Director of Graduate Studies.

M350. *General Pathology.* Prerequisite: permission of instructor. 4 units. Kinney and Staff

M351. *Correlative Pathology.* Prerequisite or concurrent: Pathology 350. 4 units. Kinney and Staff

M352. *Basic Problems in Chemical Pathology.* Prerequisite: permission of instructor. 2 units.* Wittels

M353. *Advanced Neuropathology.* Prerequisite: permission of instructor. 2 units. Vogel

M354. *Immunopathology.* Prerequisite: permission of instructor. 2 units. Vazquez and Staff

M355, M356. *Seminar in Pathology.* 1 unit each semester. Staff

M357. *Research in Pathology.* Time and credit to be arranged. Staff

M358. *Cellular and Subcellular Pathology.* Prerequisite: permission of instructor. 2 units. Trump and Sommer

M359. *Applied Instrumentation.* Prerequisite: concurrent or previous enrollment in M358. 2 units. (Spring, 1969) Trump and Staff

M360. *Enzymatic and Determinative Histochemistry.* 2 units. Trump and Sommer

M361, M362. *Advanced General Pathology.* Prerequisite: M350, and permission of instructor. 6 units.* Rowlands

M363. *Seminar in Electron Microscopy.* 1 unit. Trump

Philosophy

Professor Baylis, *Chairman* (212D West Duke Building); Professor Welsh, *Director of Graduate Studies* (212A West Duke Building); Professors Clark, Negley, Peach, and Wilson; Assistant Professors Mahoney and Spector

The Department of Philosophy offers graduate work leading to the A.M. and Ph.D. degrees. Tutorial work complements formal instruction. Students may specialize in any of the following fields: the History of Philosophy; Logic; Philosophy of Science; Epistemology; Metaphysics; Philosophical Analysis; Ethics; Aesthetics; Political Philosophy and Philosophy of Law.

Individual programs of study are developed for each student. The following requirements, however, are fundamental: (1) In February of their first year new graduate students are required to take two qualifying examinations to determine the student's fitness to continue in graduate work. One examination is in the history of philosophy, ancient and modern; one is on a central philosophical topic, treated systematically. In addition the student will take the logic preliminary examination. (2) The remaining preliminary examinations for the Ph.D., which may be taken only after a student has met the language requirements for that degree, should be taken during the first year of study beyond the A.M.

degree or at the end of the second year. In these examinations students are expected to combine historical knowledge with critical understanding.

Work in a minor field outside of the Department, but not necessarily confined to any one department, must include six units for the A.M. or the Ph.D. and may include more as a student's program requires or permits.

For Seniors and Graduates

202. *Aesthetics: The Philosophy of Criticism.* 3 units. Welsh

203. *Contemporary Ethical Theories.* 3 units. Baylis

205. *Philosophy of History.* 3 units. Negley

208. *Political Values.* 3 units. Negley

211. *Plato.* 3 units. Mahoney

217. *Aristotle.* 3 units. Mahoney

218. *Medieval Philosophy.* 3 units. Mahoney

219. *Kant.* 3 units.* Negley

225. *British Empiricism.* 3 units. Peach

227. *Continental Rationalism.* 3 units. Peach

228. *Recent and Contemporary Philosophy.* 3 units. Welsh

229. *American Pragmatism.* 3 units.* Welsh

230. *The Meaning of Religious Language.* Prerequisite: Contemporary Theology 232-233, or consent of instructor. (Listed also as Religion 230.) 3 units. Poteat

233. *Introduction to the Philosophy of Science.* 3 units. Spector

234. *Philosophy of Science.* Prerequisite: previous work in the philosophy of science or consent of instructor. 3 units. Spector

235. *Philosophy and the Sciences.* 3 units. Spector

241. *Logic. Fundamental Problems of Logic.* 3 units.* Clark and Wilson

246. *General Semantics and Theory of Language.* Prerequisite: Philosophy 103 or the equivalent. 3 units.* Wilson

247. *Philosophical Cosmology.* 3 units. Wilson

250. *Philosophical Analysis.* 3 units. Baylis and Clark

251. *Epistemology.* 3 units.* Baylis

252. *Metaphysics.* 3 units. Baylis

253. *Philosophy of Mind.* 3 units.* Clark

287-288. *Foundations of Mathematics.* Prerequisite: Mathematics 53, or consent of instructor. 6 units. (Listed also as Mathematics 287-288.) Shoenfield

291, 292. *Critical Philosophy.* Prerequisite: permission of the Department; 291 is ordinarily prerequisite for 292. 3 units each. Staff

For Graduates

331, 332. *Seminar in Special Fields of Philosophy.* 3 units. Staff

Physics

Professor Fairbank, *Chairman* (119 Physics Building); Professor Greuling, *Director of Graduate Studies* (211-B Physics Building); Professors Biedenharn, Fowler, Gordy, Lewis, Meyer, and Newson; Adjunct Professor Robl; Associate Professors Bilpuch, Robinson, and Walter; Visiting Associate Professor Straumann; Assistant Professors Beres, Carpenter, Cook, Evans, Fortney, Guyer, Han, and Roberson; Instructors Deis, Hayne, Jarvis, Kyker, Lipshutz, Pearson, and Rose

The Department of Physics offers graduate work leading to the A.M. and Ph.D. degrees. Course work is designed to give a broad basic foundation in classical and modern physics. All graduate students will be expected to acquire a thorough knowledge of the various branches of classical physics and some familiarity with modern physics and with basic laboratory skills. They will be required to take such course work in the 200-number courses as may be necessary to obtain this foundation.

The student will be required to take such course work as will best be adapted to the kind of work he will subsequently specialize in and to the kind of research he will undertake. The choice of minor will be similarly determined.

Since a practical reading knowledge of French and German is highly desirable for the student of physics, he should satisfy these language requirements as early as possible.

For Seniors and Graduates

209. *Introduction to Solid State Physics.* 3 units. Deis

215. *Introduction to Quantum Mechanics.* Prerequisites: Physics 162, 192 or equivalents; Math. 285-286 may be taken concurrently. 3 units. Evans

217-218. *Advanced Physics Laboratory.* 2-6 units. Meyer

220. *Advanced Electronics.* 3 or 4 units. Jarvis

221-222. *Theoretical Physics.* Prerequisite: Mathematics 285-286 or equivalent to be taken at least concurrently. 6 units. Cook

223-224. *Electricity and Magnetism.* 6 units. Robinson

For Graduates

302. *Advanced Mechanics.* 3 units. Han

303, 304. *Thermodynamics, Statistical Mechanics.* 6 units.* Guyer

305. *Introduction to Nuclear Physics.* 3 units. Walter

306. *Low Temperature Physics.* Prerequisite: Physics 303. 3 units.* Fairbank

308. *Introduction to High Energy Physics.* 3 units. Fowler

309. *Solid State.* Prerequisite: Physics 303. 3 units. Guyer

310. *Advanced Solid State Physics.* Prerequisite: Physics 316. 3 units.* Guyer

316. *Principles of Quantum Theory.* Prerequisite: Physics 202. 3 units. Biedenharn

317. *Intermediate Quantum Theory.* Prerequisite: Physics 316. 3 units. Biedenharn

318-319. *Electromagnetic Field Theory.* Prerequisite: Physics 223. 3 units. Greuling

330. *Nuclear Structure Theory.* Prerequisites: Physics 305 and 316. 3 units. Beres

331. *Microwave Radiation.* 3 units.* Gordy

335. *Microwave Spectroscopy.* 3 units.* Gordy

341. *Advanced Topics in Quantum Theory.* Prerequisite: Physics 317. 3 units.* Biedenharn

342. *Theory of Elementary Particles.* Prerequisite: Physics 316. 3 units.* Evans

343. *Nuclear Physics.* Prerequisite: Physics 215. 3 units.* Newson

344. *Advanced Nuclear Physics.* Prerequisite: Physics 343. 3 units.* Biedenharn

345. *High Energy Physics.* 3 units. Fortney

346. *Topics in Theoretical Physics.* Prerequisite: Physics 316, 317. 3 units.* Straumann

351-352. *Seminar.* 2-4 units. Staff

Physiology and Pharmacology

Professor Tosteson, *Chairman* (201 Medical School); Professor Blum, *Director of Graduate Studies* (255 Medical School); Professors F. Bernheim, R. Brauer, R. Bressler, Horowicz, Kostyo, Moore, and Renkin; Associate Professors Bentley, Hochstein, Jöbsis, Johnson, Lack, Long, McManus, Narahashi, Ottolenghi, Padilla, Salzano, and Somjen; Assistant Professors Andreoli, Armstrong, and Schanberg

In the Department of Physiology and Pharmacology graduate work is offered leading to the A.M. and Ph.D. degrees. Before undertaking graduate work in physiology or pharmacology a student should have a strong background in basic science including course work in mathematics, chemistry, physics and biology. Students are accepted for graduate work who have undergraduate majors in any of the following areas: biology, chemistry, physics, engineering. A brochure is available from the department which describes the program of study, financial assistance, facilities, and the research activities of the staff.

M204. *Topics in Muscle Physiology.* 2 units. Horowicz

M205. *Physiological Models.* 3 units. Moore

M260. *Cellular Aspects of Drug Action.* Prerequisites: organic chemistry, introductory animal or plant physiology. Undergraduates by permission of instructors. 3 units. F. Bernheim, Narahashi, A. Ottolenghi and P. Wilder (Chemistry)

M261. *Introductory Physiology.* 6 units. Staff

M271. *Foundations of Contemporary Physiology.* Contemporary physiology taught from the current literature. Prerequisite: Physiology M 261 or the equivalent. 4 units. Staff

M272. *Foundations of Contemporary Pharmacology.* Prerequisites: Physiology M 261 and Pharmacology M 369 or the equivalent. 4 units. Staff

M279. *Student Seminar in Physiology and Pharmacology.* Required of all graduate students majoring in physiology or pharmacology. 1 unit. Staff

M281. *Physiological Instrumentation.* 3 units. Moore

M366. *Comparative Cellular Physiology.* 2 units. Padilla

M368. *Cardiac Physiology and Pharmacology.* 2 units. Johnson

M369. *Pharmacology. Mode of Action of Drugs.* Prerequisite: M261 or equivalent. 4 units. Staff

M370. *Seminar.* Required of all graduate students who are candidates for the M.A. or Ph.D. degree. 2 units. Staff

M371. *Topics in Pulmonary and Cardiovascular Physiology.* 2 units. Salzano

M372. *Research.* Credits to be arranged. Staff

M374. *Cellular Neurophysiology.* 2 units. Moore and Narahashi

M375. *Environmental Physiology. Underwater Physiology.* 2 units. Brauer

M376. *Cellular Metabolism and Energetics.* Prerequisite: Physiology: M261 and Biochemistry 248 (or equivalent). 2 units. Jöbsis

M377. *Cellular Transport Processes.* 2 units. Tosteson and McManus

M379. *Physiology of the Central Nervous System.* Prerequisite: Physiology M261 or equivalent. 2 units. Somjen

M380. *Physiology and Pharmacology of the Circulation.* 2 units. Renkin

M385. *Mathematics of Physiological Systems.* Prerequisite: consent of the instructors. 3 units. Moore and Woodbury

Political Science

Professor Hallowell, *Chairman* (307 Library); Professor Proctor, *Director of Graduate Studies* (103 Carr); Professors Ball, Braibanti, Cole, Kulski, Leach, Rankin, and Wilson; Associate Professors Hall and Kornberg; Adjunct Professor Grzybowski; Visiting Professors Pollitt and Schweitzer

The Department of Political Science offers graduate work leading to the A.M. and Ph.D. degrees. Before being admitted to candidacy for the Ph.D. degree, an applicant is normally expected to have qualified for the A.M. degree.

Instruction is designed to prepare the student for teaching and research, for government service, and for other work related to public affairs. Before undertaking graduate study in political science, a student is ordinarily expected to have completed at least 12 semester hours of course work in political science, including some work in American government.

Fields of political science in which instruction is at present offered for candidates for the degree of Doctor of Philosophy are the following: American Government and Constitutional Law; Comparative Government and Politics (with special reference to Western Europe, Southern Asia, the Soviet Union or the Commonwealth); Political Theory; American State and Local Government; International Law and Relations; Public Administration; Political Parties and Voting Behavior. Candidates for the degree of Doctor of Philosophy in political science must elect five fields including Comparative Government and Political Theory; at least one of the five fields must be taken in a department other than Political Science.

For Seniors and Graduates

207. *American Constitutional Law and Theory.* 3 units. Rankin and Pollitt

208. *American Constitutional Law and Current National Problems.* 3 units. Rankin

209. *Problems in State and Local Government in the United States.* 3 units. Leach

214. *Comparative Administrative Law.* 3 units. Grzybowski

220. *Problems in International Politics.* 3 units. Kulski

221. *International Public Organization.* 3 units. Ball and Wilson

222. *Empirical Theory and Methodology.* 3 units. Kornberg

223. *Political Philosophy from Plato to Machiavelli.* 3 units. Hallowell

224. *Modern Political Theory.* 3 units. Hallowell

225. *Comparative Government and Politics—Western Europe.* 3 units. Cole and Schweitzer

227-228. *International Law.* 6 units. Wilson

229. *Recent and Contemporary Political Theory.* 3 units. Hallowell

230. *American Political Institutions.* 3 units. Rankin

231. *American Political Theory.* 3 units. Hallowell and Leach

234. *Civil-Military Relationships in American Government.* 3 units.*

235. *The British Commonwealth.* 3 units. Cole

241. *Public Administrative Organization and Management.* 3 units. Hall

242. *National Administration.* 3 units. Hall

244. *Administrative Law and Process.* 3 units. Hall

246. *Government Administration and Public Policy.* 3 units. Hall

249. *Comparative Political Analysis and Political Development.* 3 units. Braibanti

250. *Comparative Government and Politics—Southern Asia I.* 3 units. Braibanti

251. *Comparative Government and Politics—Southern Asia II.* 3 units. Braibanti

275. *The National Party System.* 3 units. Kornberg

276. *Comparative State Parties and Politics.* 3 units.

280. *Comparative Government and Politics—Sub-Saharan Africa.* 3 units. Proctor

285. *The Judicial Process.* Prerequisites: Political Science 127, 207, or their equivalents. Not open to students who have completed Political Science 128. 3 units.

291. *Problems of Urban Government.* 3 units. Leach

292. *Urban Administration.* 3 units.* Leach

For Graduates

301-302. *Departmental Graduate Seminar.* Required of all graduate majors in political science. No credit. Staff and Visiting Lecturers

310. *Seminar in State Government.* Open to students who have completed course 209 or its equivalent. 3 units.*

312. *Seminar in Constitutional Law.* Open to students who have completed courses 207 and 208 or their equivalents. 3 units. Rankin

321. *Seminar in Political Theory.* Open to students who have completed 6 units in Political Science 223, 224, 229, 231 or their equivalents. 3 units. Hallowell

325. *Seminar in Comparative Government and Politics.* Open to students who have completed 6 units in Political Science 225, 249, 250, 251, 280 or their equivalents. 3 units. Cole

328. *Seminar in International Law.* Open to students who have completed course 227-228 or its equivalent. 3 units. Wilson

330. *Seminar in Comparative Government and Politics—Southern Asia.* Open to students who have completed courses 250, 251 or their equivalents. 3 units. Braibanti

341. *Seminar in Public Administration.* 3 units.*

360. *Seminar in Government and Politics in the Soviet Union.* Open to students who have completed course 165, or on individual approval. 3 units. Kulski

361. *Seminar in Foreign Relations of the Soviet Union.* Open to students who have completed courses 165 or 360, or on individual approval. 3 units. Kulski

376. *Seminar in Political Behavior.* Open to students who have completed courses 222 and 275 or their equivalents, or by special approval of the instructor. 3 units.

401. *Seminar in the British Commonwealth.* 3 units. Cole, Preston, Spengler, and Braibanti

410. *Seminar in the Government, History, and Social Structure of India and Pakistan.* 3 units.* Braibanti and Associates

Related Course Work in the School of Law

There may be graduate credit for course work completed in the Duke University School of Law, under regulations referred to on page 56 of this *Bulletin.*

Psychology

Professor Alexander, *Chairman* (240 Psychology-Sociology Building); Professor Kimble, *Director of Graduate Studies* (231 Psychology-Sociology Building); Professors Adams, Brehm, Dai, Diamond, Guttman, Jones, and Wallach; Associate Professors Altrocchi, Borstelmann, Carson, Erickson, Lakin, Schiffman, and Wing; Associate Research Professor Gaffron; Assistant Professors Erickson, Kremen, Linder, Lockhead, Staddon and Wortman; Lecturers Botwinik, Cohen, Crovitz, E., Crovitz, H., Eisdorfer, Feather, Gehman, Huse, Kinsbourne, Krugman, Obrist, Peele, Shmavonian, Somjen, Stedman, and Thompson

The Department offers work leading to the A.M. and Ph.D. degrees. For the Ph.D. degree the areas of concentration are: theoretical experimental psychology, including physiological and comparative psychology; social psychology; and personality-clinical psychology. All fields of specialization presuppose thorough preparation in the general methods, data, and theories of psychology. Programs of study are typically arranged to provide this common background in the first year or two, with increasing specialization in course work and research in subsequent years. Early in the second year of residence, the Ph.D. student is expected to have planned his further program of specialized studies; by the end of the second year, when the preliminary examination is normally taken, the doctoral dissertation plan should be formulated. An original dissertation demonstrating independent research competence and scholarship is the most important formal requirement for the Ph.D. degree.

Students specializing in clinical psychology undertake field work in a variety of settings, and an integral part of this program is a one-year internship in an approved and appropriate institution. Clinical internship is arranged for the third year of study or a later year, depending on the student's progress and needs.

Related work in a variety of fields is available, but the areas most relevant to graduate work in psychology are the biological sciences (zoology, neuroanatomy, physiology), mathematics and statistics, sociology and anthropology, and philosophy of science. Basic preparation in statistics and quantitative methods is normally obtained in the Department of Mathematics.

Further details concerning the program of studies in psychology may be obtained from the Director of Graduate Studies in Psychology.

203. *Sensation and Perception.* 3 units. Lockhead

204. *Comparative Psychology.* 3 units. Adams

205. *Interpersonal Processes.* Prerequisite: Psychology 101. Linder

210. *Cognition and Higher Mental Processes.* 3 units. Wortman

213. *Conditioning and Learning.* 3 units. Staff

214. *Behavior and Learning Theory.* 3 units. Guttman

215. *Developmental Psychology.* 3 units. Borstelmann

216. *Biological Psychology.* 3 units. Diamond

217. *Research Methods in Social Psychology.* 3 units. Brehm and Linder

218. *Social Psychology.* 3 units. Jones

220. *Physiological Bases of Behavior.* 3 units. C. Erickson

234. *Seminar in Personality.* 3 units. Wallach

236. *Theoretical Psychology.* 3 units. Guttman

237. *Functional Neurophysiology.* 3 units. R. Erickson

238. *The Electroencephalogram and Psychological Function.* 3 units. Obrist

239. *Behavioral Correlates of Brain Damage in Man.* 3 units. Thompson

245. *Personality Theory I.* 3 units. Alexander or Kremen

246. *Personality Theory II.* 3 units. Alexander or Kremen or Schiffman

247-248. *Personality Assessment.* 3 units each semester. Alexander or Kremen

249. *Introduction to Exceptional Children.* (Listed also as Education 249.) 3 units. Stedman

251. *Personality and Person Perception.* Prerequisite: permsision of instructor. 3 units. Altrocchi

253, 254. *Personality Development.* 3 units each semester. Eisdorfer and Borstelmann

271 a-d. *Seminar in Selected Problems.* 3 units each.

273. *Principles of Psychological Measurement.* Prerequisite: Mathematics 232 or equivalent. 3 units. Schiffman

282. *Introduction to Methods in Psychotherapy.* 3 units. Lakin and Carson

292. *The History of Psychology.* 3 units. Adams

For Graduates

305. *Psychopathology.* 3 units. Feather

306. *Seminar in Developmental Psychology.* 3 units. Adams

309. *Seminar in Learning.* 3 units. Staff

310. *Seminar in Perception.* 3 units. Lockhead

311. *Seminar in Instrumental Behavior.* 3 units. Guttman

313. *Seminar on Concept of the Reflex.* Prerequisite: permission of instructors. 3 units. Diamond and Guttman

316. *Seminar in Social Psychology.* 3 units. Jones

318. *Seminar in Social Influence.* 3 units. Brehm

320. *Seminar in Community Mental Health.* Prerequisite: second year graduate level or permission of instructor. 3 units. Altrocchi

324. *Seminar: Behavioral Studies of the Brain.* 3 units. Diamond and R. Erickson

335-336. *Clinical Psychology Practicum.* Prerequisite: Psychology 245, 246, 247, and 248. 1 to 6 units each of two semesters. Staff

337. *Seminar in Sensory Discrimination.* A study of the neural bases of discrimination. 3 units. R. Erickson

341. *Principles of Psychotherapy, I.* Prerequisite: Psychology 282. 3 units. Dai

342. *Principles of Psychotherapy, II.* Prerequisite: Psychology 341. 3 units. Dai

343, 344. *Advanced Seminar in Clinical Psychology.* 1 to 3 units each semester. Staff

371. *Pre-School Behavior Problems.* 3 units.

Religion

Professor Beach, *Director of Graduate Studies* (209 Divinity School); Professors Baker, Cushman, Davies, Henry, Herzog, Hillerbrand, Lacy, Langford, Petry, Poteat, Price, Stinespring; Associate Professors Clark, Grislis, Osborn, Robinson, Smith, Sullivan, Wintermute; Assistant Professor Tucker

The Department of Religion offers graduate work leading to the A.M. and Ph.D. degrees. Students may major in one of three fields: (1) Biblical Studies; (2) Historical Studies; and (3) Systematic and Contemporary Studies. They will be expected to take such courses in one or both of the other fields as will conduce to an adequate understanding of their chosen fields of specialization.

In addition to course work in these major fields, students will take such other courses in cognate fields as will contribute to the enrichment of their major studies.

This minor requirement may be fulfilled either by work in a cognate department, such as Classical Studies, History, or Political Science, or by work in a cognate field within the Department of Religion other than the field of major concentration.

The program of doctoral studies presumes a grounding in religion such as is normally derived from the course content of theoretical subjects of a seminary curriculum. Candidates for admission to the doctoral program are favored, therefore, who hold a B.D. (or equivalent) degree from an accredited seminary or who have had at least two years of seminary study beyond the B.A. degree. Students applying for graduate work in religion directly from an undergraduate program should have had a strong undergraduate major in religion, and will be accepted for the Ph.D. program only on the condition of satisfactory completion of the A.M. degree with the department.

Candidates for the Ph.D. degree must complete the language requirements not later than the beginning of the second year of residence.

Field I. Biblical Studies

201-202. *First Hebrew.* 6 units. Stinespring

207. *Second Hebrew.* (First semester.) 3 units. Staff

208. *Second Hebrew.* (Second semester.) 3 units. Staff

209. *Biblical Theology.* 3 units. Tucker

226. *Exegesis of the Greek New Testament I.* (N.T. 226 A, N.T. 226 B, and N.T. 226 C, and N.T. 226 D are separate courses, offered in different semesters.) 3 units. Price or Smith

227. *Exegesis of the Greek New Testament II.* (N.T. 227 A, N.T. 227 B, N.T. 227 C, N.T. 227 D are separate courses, offered in different semesters.) 3 units. Smith

228. *The Theology of the Gospel and Epistles of John.* 3 units. Price

301. *The Theology of the Dead Sea Scrolls.* 3 units.

302. *Studies in the Intertestamental Literature.* Prerequisite: permission of the instructor. 3 units.

304. *Aramaic.* 3 units. Stinespring

305. *Third Hebrew.* 3 units. Stinespring

306. *Language and Literature of the Dead Sea Scrolls.* Prerequisite: a knowledge of Hebrew. 3 units.

307. *Syriac.* Prerequisite: some knowledge of Hebrew and Aramaic. 3 units. Stinespring

309. *History of the Ancient Near East.* 3 units. Stinespring

310. *Old Testament Prophecy.* 3 units. Tucker or Stinespring

312. *Pauline Theology.* 3 units. Davies

314. *Judaism and Christianity in the New Testament.* 3 units. Davies

319. *The Gospel According to St. Matthew in Recent Research.* 3 units. Davies

340-341. *Seminar in the New Testament.* 2 or 3 units. Price or Smith
345. *The Epistle to the Hebrews in Recent Research.* 3 units. Davies

Field II. Historical Studies

234. *The Theology of St. Thomas Aquinas.* 3 units. Grislis
240. *The Theology of Richard Hooker.* 3 units. Grislis
250. *The Reformation of the Sixteenth Century.* (Listed also as History 225.) 3 units. Hillerbrand
251. *The Age of the Counter-Reformation.* 3 units. Hillerbrand
252. *Pietism, Deism, and Rationalism.* 3 units. Hillerbrand
260. *Seminar: Wesley Studies.* 3 units. Baker
279. *Religions of East Asia.* 3 units. Sullivan
280. *The History of Religions.* 3 units. Sullivan
285. *Origins of Indian Civilization.* (Listed also as History 285.) 3 units. Sullivan
296. *Religion on the American Frontier.* 3 units. Henry
322. *Nineteenth-Century European Theology.* 3 units. Herzog
331. *The Social Message of the Early and Medieval Church.* 3 units. Petry
332. *The Medieval Church.* 3 units. Petry
334. *Church Reformers and Christian Unity.* 3 units. Petry
336. *Christian Mysticism in the Middle Ages.* 3 units. Petry
337. *The Theology of Martin Luther.* 3 units. Hillerbrand
338. *The Theology of John Calvin.* 3 units. Grislis
339. *Left-Wing Movements of the Reformation.* 3 units. Hillerbrand
362. *The Theology of St. Augustine.* 3 units. Grislis
387. *Christian Ethics and Social Philosophy.* 3 units. Lacy
391. *Historical Types of Christian Ethics I.* 3 units. Beach
392. *Historical Types of Christian Ethics II.* Prerequisite: C.E. 391. 3 units. Beach
395. *Christian Thought in Colonial America.* 3 units. Henry
396. *Liberal Traditions in American Theology.* 3 units. Henry

Field III. Systematic and Contemporary Studies

210. *Contemporary British Theology.* 3 units. Langford
230. *The Meaning of Religious Language.* (Listed also as Philosophy 230.) 3 units. Poteat
231. *Seminar in Christianity and Contemporary Thought.* 3 units. Poteat
292. *Christian Ethics and International Relations.* 3 units. Lacy
293. *Sociological Analysis of Religion.* 3 units. Clark
294. *Institutional Analysis of Religious Bodies.* 3 units. Clark
300. *Systematic Theology.* 3 units. Herzog

303. *The New Hermeneutic and the Concept of History.* 3 units. Herzog

320. *Hegel and Schleiermacher.* 3 units. Herzog

325. *Philosophical Theology I.* 3 units. Robinson or Cushman

326. *Philosophical Theology II.* 3 units. Robinson or Cushman

328. *Twentieth-Century European Theology.* 3 units. Herzog

333. *Seminar: Marxist Ideology and Christian Faith.* 3 units. Lacy

380. *Existentialist Thought.* 3 units. Poteat

381. *Seminar: Phenomenology and Religion.* Prerequisite: permission of instructor. 3 units. Poteat

385. *Religion in American Literature.* 3 units. Henry

386. *Christianity in Dialogue with Other Faiths.* 3 units. Lacy

389. *Christian Ethics and Contemporary Culture.* 3 units. Beach

390. *Current Problems in Christian Ethical Theory.* 3 units. Beach

394. *Christianity and the State.* 3 units. Beach

397. *Contemporary American Theology.* 3 units. Henry

398. *Colloquium on the College and University Teaching of Religion.* Beach and Staff

Romance Languages

Professor Fein, *Chairman* (205 Foreign Lang.); Associate Professor Cordle, *Director of Graduate Studies* (303 Foreign Lang.); Professors Davis, Dow, Fowlie, Herrero, Predmore, and Wardropper; Associate Professors Grant, Hull, Tétel, and Vincent

The Department of Romance Languages offers graduate work leading to the A.M. and Ph.D. degrees. In order to undertake graduate study in this Department, the student should normally have credit for four years of college courses in the chosen language, or 18 semester hours beyond the conventional two units offered at entrance to college. In addition to this minimum requirement, the student should have had one semester of review in composition and grammar.

It is recommended that candidates for the A.M. and Ph.D. degrees take a second Romance language as the minor subject.

French

209. *Advanced Composition and Syntax.* 3 units. Hull

210. *French Phonetics.* 3 units. Hull

213, 214. *French Literature of the Seventeenth Century.* 6 units.

217. *Mallarmé and Rimbaud.* 3 units. Fowlie

219. *Old French Literature.* 3 units. Vincent (Not 1968-1969)

221, 222. *The Nineteenth-Century French Novel.* 6 units. Grant

223. *French Literary Criticism.* 3 units. Fowlie (Not 1968-1969)

224. *History of the French Language.* 3 units. Hull (Not 1968-1969)

225, 226. *From Renaissance to Baroque in French Literature of the Sixteenth Century.* Tétel

228. *French Poetry of the Twentieth Century.* 3 units. Fowlie (Not 1968-1969

233. *Contemporary French Theater.* 3 units. Fowlie

234. *Proust.* 3 units. Fowlie (Not 1968-1969)

236. *Baudelaire.* 3 units. Fowlie (Not 1968-1969)

241, 242. *French Literature and Thought in the Age of Enlightenment.* 6 units.

245, 246. *French Literature of the Twentieth Century.* 6 units. Cordle

For Graduates

311, 312. *French Seminar.* 3 units each. Fowlie, Cordle, Grant, and Tétel

—. *Graduate Reading Course.* Graduate students only. No credit.

Italian

For Seniors and Graduates

288. *The Renaissance.* 3 units. Tétel (Not 1968-1969)

Spanish

For Seniors and Graduates

251. *The Origins of the Spanish Novel.* 3 units. Wardropper (Not 1968-1969)

252. *Spanish Lyric Poetry Before 1700.* 3 units. Wardropper (Not 1968-1969)

253. *The Origins of the Spanish Theater.* 3 units. Wardropper (Not 1968-1969)

255, 256. *Modern and Contemporary Latin-American Literature.* 6 units. Fein

257. *Old Spanish.* 3 units. Davis

259. *Spanish Phonetics.* 3 units. Predmore (Not 1968-1969)

260. *Advanced Composition and Syntax.* 3 units. Herrero (1968-1969)

261. *Nineteenth-Century Novel.* 3 units. Davis (1968-1969)

262. *Romanticism in Spain.* 3 units. Herrero (Not 1968-1969)

265. *Golden Age Literature: Cervantes.* 3 units. Predmore and Wardropper

266. *Golden Age Literature: The Drama.* 3 units. Wardropper (Not 1968-1969)

275,276. *Contemporary Spanish Literature.* 6 units. Herrero and Predmore

For Graduates

321, 322. *Hispanic Seminar.* 3 units. Davis, Fein, Herrero, Predmore, and Wardropper

Romance Languages

218. *The Teaching of Romance Languages.* 3 units. Dow

Slavic Languages and Literatures

Associate Professor Krynski, *Chairman*; Associate Professor Jezierski; Assistant Professor M. Pavlov

No graduate degree is presently offered in Slavic Languages and Literatures. The following courses may serve in the minor programs of students in other departments.

201, 202. *The Novelists of Nineteenth-Century Russia.* 6 units. Krynski

207. *Soviet Literature and Culture.* 3 units. Jezierski

212. *Pushkin.* Prerequisite: Russian 101, or the instructor's consent. 3 units. Jezierski

215, 216. *Advanced Composition and Syntax.* Prerequisites: Russian 91, 92 or instructor's permission. 6 units. M. Pavlov

224. *The Russian Short Story—Eighteenth Century to the Present.* 3 units. Jezierski (Not 1968-1969)

225. *Tolstoy.* 3 units. Jezierski

227. *Gogol.* 3 units. Jezierski (Not 1968-1969)

230. *Chekhov.* 3 units. Krynski

232. *Fyodor Dostoevsky.* 3 units. Krynski (Not 1968-1969)

233. *Ivan Turgenev.* 3 units. Krynski

Slavic 204. *Polish Literature of the Twentieth Century.* 3 units. Krynski

Slavic 205. *The Structure of Polish in Relation to Russian.* 3 units. Krynski (Not 1968-1969)

Slavic 206. *Reading in Contemporary Polish Prose in the Original.* 3 units. Krynski (Not 1968-1969)

Slavic 236. *Russian and Polish Romanticism.* 3 units. Krynski (Not 1968-1969)

Sociology and Anthropology

Professor McKinney, *Chairman* (268 Sociology-Psychology Building); Professor Smith, *Director of Graduate Studies* (332 Sociology-Psychology Building); Professors Back, Kerckhoff, La Barre, Maddox, Thompson, and Tiryakian; Associate Professors Beidelman, McCormack, Palmore, Preiss, Rowe, Roy; Assistant Professors Apte, Crocker, Prost

The Department offers graduate work leading to the A.M. and Ph.D. degrees in Sociology and in Anthropology. Before undertaking advanced work in this department, a student must have completed a minimum of twelve semester hours of approved preliminary courses in his chosen discipline, and twelve additional semester hours in the field or in related work. Applicants for admission should submit scores on the Graduate Record Examination, especially the Aptitude Test.

Before being admitted to candidacy for the Ph.D. degree in Sociology, an applicant is normally expected to have qualified for the A.M. degree. Candidates for the Ph.D. degree are expected to demonstrate in qualifying and preliminary examinations a broad background in the various aspects of sociology—substantive, theoretical, and empirical. The program of each candidate is determined by a committee which reviews his previous work and sets the specific requirements to be met. These requirements will include work in related fields such as anthropology, economics, mathematics, philosophy, political science, or psychology. Emphasis is placed on the completion of the dissertation, directed by a member of the staff, demonstrating competence and independence in the investigation of an original and significant problem.

Before being admitted to candidacy for the Ph.D. degree in Anthropology, an applicant is normally expected to have qualified for the A.M. degree. Candidates for the Ph.D. degree must show evidence by preliminary or qualifying examination of a command of a major field within the discipline. The Department recognizes the trend in modern Anthropology toward interdisciplinary research and part of the Anthropology course requirements may be replaced by advanced work in anatomy, economics, sociology, zoology, and other disciplines relevant to the student's program.

Further details of these programs, the departmental facilities, the staff, and various stipends available are described in a brochure which may be obtained from the Director of Graduate Studies, Department of Sociology and Anthropology.

Sociology

For Seniors and Graduates

241. *Social Stratification.* 3 units. Roy

242. *The Sociology of Occupations and Professions.* 3 units. McKinney and Roy

243. *Population Dynamics and Social Change.* 3 units. Staff

247. *Community and Society.* 3 units. Thompson

251. *The Sociology of Modernization.* 3 units. Staff

253. *Social Institutions.* 3 units. Thompson

255. *Race and Culture.* 3 units. Thompson

259. *Religion and Social Change.* Prerequisite: either Anthropology 264, Sociology 151, or the equivalent. 3 units. Tiryakian

272. *The Socialization Process.* 3 units. Kerckhoff

275. *Social Attitudes and Individual Behavior.* 3 units. Back and Kerckhoff

278. *Social Structure and the Life Cycle.* 3 units. Maddox

282. *Principles of Sociological Analysis.* Prerequisites for undergraduates: at least 15 s.h. and a B average in sociology, and permission of the instructor. 3 units. McKinney and Thompson

295. *Methodology in Sociology.* 3 units. Back and Smith

297. *Statistical Analysis in Sociology.* Prerequisite: Mathematics 233 or equivalent, or permission of the instructor. 3 units. Staff

For Graduates

325. *Social Aspects of Mental Illness and Treatment.* 3 units. Preiss

341. *Special Problems of Complex Systems.*

(1) *Industrial and Professional Systems.* 3 units. McKinney, Roy, and Pondy

(2) *Mass Communications.* Prerequisite: permission of instructor. 3 units. Smith

(3) *Urban Society.* 3 units. Thompson and Smith

(4) *Human Ecology.* 3 units. Thompson and Smith

351, 352. *Seminar in Social Organization.* 3 units each semester. Maddox, McKinney, and Pondy

361. *Seminar in Comparative Sociology.* 3 units. Staff

373, 374. *Social Psychological Issues in Sociology.* 3 units each semester. Back, Kerckhoff, and Preiss

381. *Development of Sociological Theory.* 3 units. McKinney and Tiryakian

385, 386. *Seminar in Sociological Theory.* Prerequisite: Sociology 381 or equivalent. 3 units each semester. McKinney and Tiryakian

392. *Individual Research in Sociology.* Prerequisite: Sociology 295 or permission of instructor. 3 units. Back, Kerckhoff, and Smith

397, 398. *Seminar in Special Research Problems.* Prerequisite: permission of instructor. 3 units each semester. Back and Smith

Anthropology

For Seniors and Graduates

220. *Society and Culture in India.* 3 units. Rowe and McCormack

222. *Topics in African Anthropology.* 3 units. Beidelman

231. *Physical Anthropology.* (Listed also as Anatomy M231.) 3 units. Buettner-Janusch

232. *Human Genetics.* Prerequisites: Anatomy 231, Zoology 131 (or an elementary course in biology including genetics), or permission of instructor. (Listed also as Anatomy 232 and Zoology 232.) 3 units. Buettner-Janusch

238. *Language and Society.* 3 units. McCormack and Apte

249. *Economic Anthropology.* 3 units. Rowe and Crocker

260. *Linguistic Anthropology: Phonemics.* Prerequisite: permission of instructor. 3 units. Apte

261. *Linguistic Anthropology: Morphology and Syntax.* Prerequisite: Anthropology 260 or permission of instructor. 3 units. Apte

262. *Anthropology of Law.* 3 units. Beidelman and Crocker

263. *Primitive Art and Music.* 3 units. La Barre

264. *Primitive Religion.* 3 units. La Barre and Crocker

265. *Personality and Society.* 3 units. La Barre

266. *Personality and Culture.* 3 units. La Barre and Rowe

276. *Analysis of Kinship Systems.* 3 units. McCormack and Crocker

280, 281. *Seminar in Selected Topics.* Prerequisite: permission of instructor. 3 units each semester. Staff

291, 292. *Anthropological Theory.* 3 units each semester. Beidelman and Rowe

For Graduates

330. *Seminar in Anthropology.* Offered both semesters. 1 to 3 units each semester. Staff

393. *Individual Research in Anthropology.* 3 units. Staff

410. *Seminar in the Government, History, and Social Structure of India and Pakistan.* 3 units. McCormack, Rowe and Associates

Zoology

Professor Horn, *Chairman* (227 Biological Sciences Building); Associate Professor Nicklas, *Director of Graduate Studies* (042 Biological Sciences Building); Professors Bailey, Buettner-Janusch, Bookhout, Fluke, Gray, Gregg, Hughes-Schrader, Klopfer, Livingstone, Schmidt-Nielsen, Wilbur; Adjunct Professor Stefansson; Associate Professors Costlow, Gillham, Hunter, Tucker, Vernberg, Wainwright, and Ward; Assistant Professors Doyle and Vogel

To undertake study toward an advanced degree in zoology, a student should have completed an undergraduate major in zoology or its equivalent. This normally amounts to 24 or more hours of course work distrib-

uted among various fields of zoology. Most entering students will have had organic chemistry, calculus, and a year of physics. The department recognizes the trend in modern biology towards interdisciplinary research and part of the zoology requirments may be replaced by advanced work in chemistry, mathematics, physics, psychology, etc.

Required work for the A.M. degree ordinarily includes 12 units of advanced course work in zoology, 6 units of course work in a minor department, and an additional 6 units of advanced work in the major or minor department, or in other pertinent departments. Furthermore, an acceptable thesis is necessary for the fulfillment of the degree requirements.

Normally the program for the Ph.D. degree includes graduate courses in several fields of zoology, courses in the minor subject, wide reading in science in general and in biology in particular, research, and a dissertation based on original work. Minor work is available in many fields, including anatomy, biochemistry, botany, chemistry, geology, physics, physiology and psychology.

For Seniors and Graduates

201. *Animal Behavior.* Prerequisites: Physiology, Genetics and Evolution, or consent of instructor. 3 units; 4 units with laboratory. Klopfer (Not 1968-1969)

203. *Ecology.* 4 units. (See also Marine Laboratory.) Staff

210. *Experimental Genetics.* (Listed also as Genetics 210.) 4 units. Ward and Genetics Staff

214. *Biological Oceanography.* Prerequisites: courses in ecology or invertebrate zoology, chemistry, and calculus; differential equations strongly recommended. 3 units. Doyle

215. *General Physical and Chemical Oceanography.* Prerequisites: one year of physics and chemistry, mathematics through calculus. 6 units. *(Given at Beaufort)* Stefansson

216. *Limnology.* 3 units; 4 units with laboratory. Livingstone

224. *Vertebrate Zoology.* Prerequisite: Zoology 53. 4 units. Bailey (Not 1968-1969)

228. *Experimental Embryology.* 4 units. Gregg (Not 1968-1969)

232. *Human Genetics.* Prerequisites: Anatomy 231 (Zoology 131) or an elementary course in biology including genetics, or permission of instructor. (Listed also as Anatomy 232.) 3 units. Buettner-Janusch

238. *Systematic Zoology.* Prerequisite: Biology 1-2. 4 units. Bailey

243. *Cytology.* Prerequisite: one year of biology. (Listed also as Botany 243.) 4 units. Anderson (Botany) and Nicklas

244. *Topics in Cell Structure and Function.* Prerequisite: Zoology 243 (Botany 243) or equivalent and permission of instructor. (Listed also as Anatomy 244.) 2 units. Moses (Anatomy) and Nicklas (Not 1968-1969)

245. *Radiation Biology.* Prerequisites: college physics and mathematics, organic chemistry. 3 units, or 4 units with laboratory. Fluke

246. *Physical Biology.* Prerequisites: Mathematics 22, Chemistry 151, Physics 41, and one and one-half years of college biology or consent of instructor. 4 units. Fluke and Wainwright

247. *Biological Nucleonics.* Prerequisites: consent of instructor and one year each of college biology, chemistry, and physics. (Listed also as Forestry 247.) 3 units. Fluke and Woods (Forestry)

248. *Introductory Biochemistry.* Prerequisites: Chemistry 151, one year of college physics (second semester may be concurrent), Mathematics 22, or consent of instructors. 3 units. Wakil (Biochemistry) and Kirshner (Biochemistry)

250. *Physiological Ecology of Marine Animals.* Prerequisite: a course in physiology. 6 units. *(Given at Beaufort.)* Vernberg

252. *Comparative Physiology.* Prerequisite: Zoology 151 or equivalent. 4 units. Schmidt-Nielsen

271. *Cellular Physiology.* Prerequisites: two years of biology and at least one year of chemistry. 4 units. Wilbur and Staff

274. *Marine Invertebrate Zoology.* Prerequisites: Biology 1-2. 6 units. *(Given at Beaufort)* Staff

278. *Invertebrate Embryology.* Prerequisite: Zoology 92. 4 units.* Bookhout

For Graduates

351, 352. *Departmental Seminar.* 1 unit credit by arrangement, Staff and Invited Lecturers

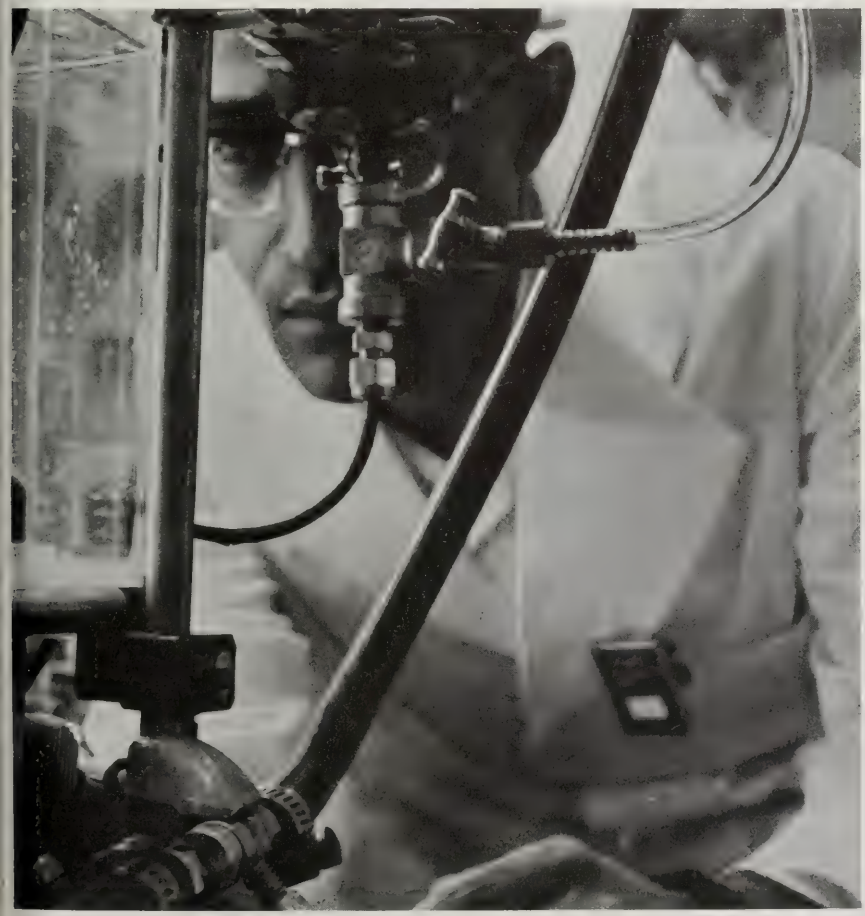
353, 354. *Research.* Students who have had proper training may carry on research under direction of members of the staff in the following fields: (1) Embryology. (2) Physiology, (3) Cytology, Histology, (4) Invertebrate Zoology, (5) Ecology, (6) Morphology, (7) Parasitology, (8) Vertebrate Zoology, (9) Limnology, (10) Entomology, (11) Genetics, (12) Biophysics, (13) Animal Behavior, (14) Systematics, (15) Oceanography. Hours and credits to be arranged. Staff

355, 356. *Seminar.* One or more seminar courses in particular fields are given each semester by various members of the staff. These will be in the field indicated under courses 353-354 above. 2 units.

Marine Laboratory. The following courses will be given at Duke University Marine Laboratory, Beaufort, N. C., during the summer of 1968: 203, Marine Ecology; 215, General Physical and Chemical Oceanography; 250, Physiological Ecology of Marine Animals; 274, Marine Invertebrate Zoology. Students with the proper training may register for 353 and 354, Research in Zoology.

Master's Degree for Students Specializing in Physical Therapy

Students specializing in physical therapy may request admission to the Graduate School and, if admitted, follow the curriculum for the Master of Arts degree in any of several related fields. Admission must be through the appropriate graduate department. Selected physical therapy subjects are integrated with the graduate courses throughout the two-year period. Upon satisfactory completion of these requirements, a Master of Arts degree and a Certificate in Physical Therapy will be awarded. For information concerning the Physical Therapy Program write to: Physical Therapy Department, Box 3247, Duke University Medical Center.



The School of Law

Table of Contents

General Information 1
Law School: Its Purpose and Methods 1

Courses of Study and Degree Programs 3
Juris Doctor Degree 3
Graduate Study in Law 6
Master of Laws Degree 6
Master of Comparative Law Degree 7
Doctor of Juridical Science Degree 8

Resources for Study 9
The Law Building 9
The Law Library 9
Rule of Law Research Center 10

Student Life 11
Living Accommodations 11
Services Available 12
Professional and Honorary Organizations 13
Recreational Facilities 15
Publications 15

Admission 17
Procedures 17
Requirements 18

Financial Information 21
Fees and Expenses 21
Student Aid 23

Registration and Regulations 25
Registration 25
Academic Regulations 25
Nonacademic Regulations 27

General Information

Law School: Its Purpose and Methods

The official name of the School is the Duke University School of Law, but it will be referred to in these pages as the Duke Law School or the Law School.

The Duke Law School derives historically from the School of Law of Trinity College, with its history of legal instruction beginning in the middle of the past century, antedating the Civil War. When, in the 1920's, Trinity College became Duke University, the Law School was completely reorganized. This reorganization culminated with the housing of the Law School on the new West Campus in 1930, when the character of the Duke Law School can be said to have been reshaped.

The curriculum of the Law School provides thorough preparation for the practice of law in any state, and its graduates have been admitted to the bar throughout the nation. Opportunities for specialization in particular branches of the law are afforded.

In carrying out the trust imposed by the indenture establishing the Duke Endowment, the Law School seeks to have the student acquire knowledge and comprehension not only of legal doctrine, but also of the judicial process and of the social, economic, and political problems with which law and lawyers must deal. The method of instruction employed compels analysis of judicial opinions and inquiry into the non-legal as well as the legal considerations which underlie them. In ap-

propriate courses, special consideration is given to the work of the legislative and administrative agencies of government. In recognition of the increasing importance of the role of the lawyer in representing private interests before government agencies and in government service, a broad program is offered in the public law field. Opportunity for creative student work is provided by seminar courses and supervised individual study and research.

Practical training is not left for the first years of practice. A carefully integrated series of courses is designed to give students actual experience in the work of lawyers. Legal research, writing courses, moot court work, and practical study of steps in law suits in the first and second years are followed in the third year by seminar courses emphasizing trial techniques, legal planning and drafting, and interdisciplinary approaches. A student bar association affords a means whereby the student may gain acquaintance with the professional organizations through which a lawyer may and should contribute to the well-being of his profession and society.

Courses of Study and Degree Programs

Juris Doctor Degree

Upon favorable recommendation of the Faculty, the degree of Juris Doctor (J.D.) will be conferred on students who shall have successfully completed six semesters of law study, the last two semesters of work immediately preceding the granting of such degree having been completed in this School.

A student shall be deemed to have completed successfully six semesters of law study if during this period he has completed the following requirements:

(1) secured a passing grade in courses aggregating 84 semester hours;
(2) secured in every required course a grade not requiring repetition thereof; and
(3) secured a weighted average at least five points above passing, whether computed by including or by excluding the grades in the first-year courses.

Students who have spent only their last two semesters of study in residence in this School must have received a weighted average at least five points above passing for that year.

*Curriculum**

First Year (Required)	*Semester Hours*	
	Fall	*Spring*
Civil Procedure (Paschal & Strong)	3	3
Constitutional Law (Van Alstyne)	5	
Contracts (Gellhorn & Loiseaux)	2	3
Criminal Law (Livengood & Shimm)	3	
Criminal Procedure (Everett & Pye)		2
Legal Accounting (Hobbet)	1	1
Legal Research and Writing		
Property I (Johnston & Sparks)		4
Torts (Christie & Edmonds)	2	3
Total	16	16

Second and Third Years

In the absence of special authorization by the Dean, each student is required to take in each semester courses aggregating not less than 12 and not more than 16 hours.

The program in the second and third years is entirely elective. In planning his elective program, the student must bear in mind that certain courses are prerequisites to other advanced courses:

Business Associations is prerequisite to Business Planning, Securities Regulation, and Seminar in Corporate Planning and Drafting.

Business Associations and Federal Taxation I are prerequisites to the Seminar in Corporate Insider Problems.

Conflict of Laws is a prerequisite to the Seminar in Conflict of Laws.

Evidence is prerequisite to Trial Practice.

Federal Taxation I is prerequisite to Federal Taxation II, Federal Taxation III, and the Seminar in Taxation.

Federal Taxation I, Federal Taxation II, and Property II are prerequisites to the Seminar in Tax and Estate Planning.

Jurisprudence is prerequisite to the Seminar in Jurisprudence.

Labor Relations is prerequisite to the Seminar in Labor Law.

Trade Regulation is prerequisite to the Seminar in Antitrust.

Constitutional Law is prerequisite to the Seminar in Civil Liberties and Rights.

Fall Semester	*Semester Hours*
Administrative Law (Gellhorn)	3
Admiralty (Paschal)	3
Business Associations (Latty)	2
Business Planning (Latty)	4
Seminar in Civil Liberties and Rights (Van Alstyne)	2
Conflicts (Pye)	3

*For a description of each course, consult the *Bulletin of the School of Law.*

Constitutional Law (to be announced) 3
Seminar in Consumer Protection (Gellhorn) 2
Copyright and Unfair Competition (not offered 1968-69) .....
Seminar in Corporate Insider Problems (not offered 1968-69) .....
Seminar in Criminal Procedure (Everett) 2
Debtors' Estates (Shimm) 3
Equitable Remedies (Sparks) 2
Evidence (Strong) 3
Federal Taxation I (Hobbet) 3
Federal Taxation II (Johnston) 3
International Transactions (not offered 1968-69) .....
Jurisprudence (Christie) 3
Labor Relations (Livengood) 3
Land Use and Development (Johnston) 3
Legal Process (Edmonds) 3
Legal Profession (faculty) 1
Seminar in Legislation (not offered 1968-69) .....
Mortgages (not offered 1968-69) .....
Patent Law (to be announced) 2
Property II (Sparks) 3
Sales and Secured Financing (Loiseaux) 3
Seminar in Soviet Law (Grzybowski) 2
State and Local Government (Everett) 2
Trade Regulation (Havighurst) 4
Workmen's Compensation (not offered 1968-69) .....

Spring Semester

Seminar in Antitrust (Gellhorn) 2
Business Associations (Latty) 2
Comparative Law (Baade) 3
Constitutional Law (to be announced) 2
Corporate Finance (not offered 1968-69) .....
Seminar in Corporate Planning and Drafting (O'Neal) 2
Seminar in Criminal Law (Livengood) 2
Seminar in Estate Planning (Johnston) 2
Family Law (Edmonds) 2
Federal Courts (Paschal) 3
Federal Taxation III (Hobbet) 3
Insurance (Strong) 2
International Law (Baade) 3
Seminar in International Organizations (not offered 1968-69) .....
Seminar in Jurisprudence (not offered 1968-69) .....
Seminar in Labor Law (Livengood) 2
Legal Accounting (Havighurst) 2

Legal History (Christie) 2
Seminar in Military Law (Everett) 2
Natural Resources (Shimm) 3
Negotiable Instruments (Loiseaux) 2
Seminar in Poverty and Law (Pye & Shimm) 2
Property III (Sparks) 3
Seminar in Psychiatry and Law (Shimm) 2
Regulated Industries (Havighurst) 2
Securities Regulation (Latty) 3
Social Legislation (Livengood) 2
Seminar in Taxation (Hobbet) 2
Trial Practice (Edmonds & Reed) 2
Seminar in Urban Renewal (Everett) 1
Seminar in World Law (Larson) 2

Individual research for credit not exceeding three semester hours per year will be permitted, subject to the approval and under the supervision of a member of the faculty.

In addition, the full resources of the University are available to students who wish to pursue limited studies in other disciplines during their second or third years of law study. Normally, courses in other departments will not be credited toward the degree requirements of the Law School.

Graduate Study in Law

The graduate program is framed with a view to the encouragement and recognition of legal scholarship. It is designed for the qualified candidate who aspires to a teaching career, or who wishes to become proficient in a special field of the law, to do legal research, to prepare himself for a public-law practice in or out of government, or to pursue studies in subjects he has not explored previously. This program is especially suitable for law teachers and for those who wish to become either law teachers or specialists in the law and who wish to carry on advanced study and original research under faculty supervision, and for foreign law students, teachers, and lawyers who desire to extend their knowledge of the laws of the United States and to engage in comparative legal research.

Three graduate degrees are granted: the degree of Master of Laws (LL.M.), the degree of Master of Comparative Law (M.C.L.), and the degree of Doctor of Juridical Science (S.J.D.).

Master of Laws Degree

The degree of Master of Laws is reserved for students who, having demonstrated their capacity for graduate work in law, maintain a level of scholarship substantially higher than that required for the degree of Juris Doctor.

Course Requirements

The candidate for this degree is required to complete a course of study comprising not less than twenty nor more than twenty-six semester hours, or approved research equivalent thereto. Two full semesters are required for the completion of this program. A candidate for this degree is required to include in his course of study at least two courses or seminars selected from those offered in Jurisprudence, in Legal History, and in the international or comparative law area. Other suitable courses will be selected by the candidate subject to the approval of the Committee on Graduate Study. In special circumstances, credit of not more than two hours a semester may be given for approved, supervised research projects. In addition to completing twenty semester hours of courses or seminars the candidate must prepare and submit an essay, representing substantial research on a legal subject. This essay is to be prepared under the supervision of the instructor in charge of the field in which the research is done. The candidate will find it helpful to have formulated a project of research, or alternative projects, before his admission to graduate study or, at any rate, before pursuing his graduate study in residence. In appropriate cases the candidate will be permitted, and may be encouraged, to take related work in other departments of the University.

Master of Comparative Law Degree

The degree of Master of Comparative Law is awarded only to students who maintain a level of scholarship substantially higher than that required for the degree of Juris Doctor.

Course Requirements

The candidate for this degree is required to complete a course of study comprising not less than twenty semester-hours. At least two semesters in residence are required for the completion of this program. A candidate for this degree is required to include in his course of study at least two courses from those offered in the world law and comparative law area, and either Jurisprudence or Legal History. Other suitable courses will be selected by the candidate subject to the approval of the Committee on Graduate Study. In special circumstances, credit of not more than two hours a semester may be given for approved, supervised research projects. The candidate is also required to submit an essay representing substantial research on a subject of comparative or international law, written in the English language. This essay is to be prepared under the supervision of the instructor in charge of the field in which the research is done. In appropriate cases the candidate will be permitted, and may be encouraged, to take related work in other departments of the University.

Doctor of Juridical Science Degree

Upon recommendation of the faculty, the degree of Doctor of Juridical Science will be conferred on students admitted to candidacy for that degree who complete and submit a monograph or series of essays suitable for publication and deemed by the faculty to be of distinguished character and who pass an oral examination before a special committee appointed for that examination.

Requirements

At least one academic year and, in the absence of an extension granted by the faculty, not more than three years must elapse between the award of the Master's degree and the award of the Doctorate of Juridical Science. Students who have received the Master's degree from another law school must spend at least two full semesters engaged in research at this School, and in addition may be required to complete a course of study prescribed by the Committee on Graduate Study. The monograph or series of essays required may be based upon, or be an extension of, the essay required for the Master's degree, provided substantial additional research is represented.

Resources for Study

The Law Building

The new Law School building was completed and occupied in September of 1962. Located just off the Gothic core of the West (main) Campus, the building is of modified Georgian architecture with contemporary overtones. It reflects a notable characteristic of the School: a high ratio of facilities to students admitted. Despite long-range plans to keep the student body modest in size, the general spaciousness, number of classrooms and seminar rooms, library reading-room seating, library stack spaces, student carrels, student lockers, student lounge rooms, faculty offices, quarters for legal publications, special quarters for institutional studies, and courtroom are of proportions ordinarily associated with a far larger student body.

Additional information concerning the Law School and its facilities is contained in the illustrated brochure *Studying Law at Duke.*

The Law Library

The law library is one of the large law collections in the country. It consists of American and English statutory and case law; collections of international, comparative, and foreign law materials; treatises;

digests; encyclopedias; the various selected case series; a comprehensive collection of legal periodicals; and publications in the fields of history, economics, government, and other social sciences, supplemental to the strictly legal materials. The Library receives every current legal periodical of general interest printed in the English language and complete up-to-date legislation of the United States and of every state and territory of the Nation.

There are many thousands of additional volumes of a legal nature in the main University Library building, as well as the general collection of over a million volumes, to all of which the law students and faculty have convenient access.

The Law Library is administered by a professionally trained staff and is open to the public daily, as well as in the evenings when the Law School is in session.

Rule of Law Research Center

In the fall of 1958, the Duke Law School established its Rule of Law Research Center, with Professor Arthur Larson as its Director.

The purpose of the Center is to undertake both long-range and current studies and publications bearing on the settlement of international disputes and the achievement of peaceful change under law. Typical projects include two recently published books: *Sovereignty within the Law* and *Propaganda: Toward Disarmament in the War of Words*, and studies of Population Control Laws, and Compliance and Enforcement under International Law. The Center also produces studies and publications in the field of the law of civil rights and race relations. A staff of international lawyers is maintained, with undergraduate law students as research assistants. The regular staff includes specialists in the world's major legal systems. Opportunities for course work at the Law School include not only the regular courses in International Law, Comparative Law, International Organizations, and International Transactions, but a unique Seminar in World Law for students particularly interested in this approach to the problem of world order.

Duke University students are also encouraged to combine graduate work with activities of the Center, opportunities for which are made available as far as practicable.

Student Life

Living Accommodations

*Housing**

The Duke University Graduate Center provides accommodations available to men and women law students. In addition, women enrolled in the Law School may reside in the Town House Apartments, which are complete with basic furnishings, utilities, and maintenance. Of course, there are numerous private apartments and rooms proximate to the campus in the town or in the surrounding countryside.

A resident student, in order to retain his room for the succeeding academic year, must make application at the Office of Housing Management for confirmation of the reservation.

The authorities of the University do not assume responsibility for persons selected as roommates. Each student is urged to select his roommate when the room is reserved. Any student who occupies a double room without a roommate will be given written notice from the Housing Office to obtain a roommate or he may be required to pay the rental consideration for the whole room.

Any exchange of rooms must be made at the Office of Housing Management. Persons exchanging rooms without the approval of the Housing Management Office will be subject to the charges for both rooms.

Duke University Apartments, which consist of efficiency and one- and

*Information pertaining to residence halls and Duke University Apartments is subject to change prior to September, 1968.

two-bedroom apartments, are available to married law students. The apartments are complete with basic furnishings. Heat, electricity (except for window fans and air conditioners), hot and cold water, garbage collection, and maintenance of grounds are all included in the rental charge. For further information on married-student apartments, write to the Office of Housing Management, Duke Station, Durham, North Carolina 27706.

Residence hall rooms and Duke University Apartments may be reserved by new applicants after they have been accepted officially for admission to the School of Law. Applications for residence hall rooms are to be made to the Office of Housing Management, Duke Station, Durham, North Carolina 27706. For fees and deposit details see pages 21-22.

Food Services

Food service is cafeteria style. The dining facilities on the West Campus include two cafeterias with multiple-choice menus, a grill, and the Oak Room with table service of full meals and *a la carte* items. In the Men's Graduate Center there is a cafeteria with multiple-choice menus and a Coffee Lounge where sodas and sandwiches are served from 11:30 a.m. to 11:00 p.m.

Services Available

Placement Service

Duke Law School's placement service is a very active one, in constant touch with leading law firms throughout the nation, federal and state agencies, corporate legal departments, and other employment opportunities. Special attention is given to placing second-year students in law internships during the following summer.

Each year the number of representatives coming to interview exceeds the number of students available to become associated with these potential employers.

Medical Care

With exceptions noted below, full medical and surgical care is furnished to all regularly matriculated law students of the University who have paid the semester tuition. This service is under the direction of the physician in charge with the cooperation of the staff of Duke Hospital. It includes hospitalization (limited to thirty days), medical and surgical care, drugs, dressings, x-ray studies, and ward (but not special) nursing. A charge for board is made at the same rate as in the University dining halls. Refraction of eyes and treatment of teeth and of all chronic and pre-existing

conditions, such as diseased tonsils, hernia, elective surgery, chronic skin conditions, and endocrine disturbances, or accidents or illnesses occurring during vacations or while off the campus are not included in this service. The cost of any necessary braces and orthopaedic appliances, as well as special nursing, must be borne by the patient. If the student has insurance providing hospitalization, surgical, or medical benefits, the benefits shall be applied to the cost of his medical care.

The Duke Legal Internship Program

In the summer of 1965, the Law School with the aid of a grant from the National Defender Project, initiated a summer internship program in the administration of criminal justice. This program, which was organized and is directed by Professor Everett, brings the student interns into contact with a variety of problems in the criminal law, as they participate under the supervision of prosecuting attorneys and court-appointed defense counsel in the investigation and preparation of cases for trial.

Employment Opportunities

Although it is not advisable for a law student to undertake any substantial amount of outside work, particularly in the first year, arrangements have been made to provide part-time employment for capable law students who otherwise would be unable to meet the expense of studying law at Duke.

A number of positions as assistants in the Law Library and as research assistants are open to students, with some preference being given to those who do not receive other aid from the University.

Professional and Honorary Organizations

The Duke Bar Association

The Duke Bar Association coordinates the professional, social and other extra-curricular activities of the student body. The Association resembles, in its composition and purpose, both a university student government and a professional bar association. Among the various committee activities are publishing the Placement Bulletin, procuring special speakers, assisting in Moot Court competition, publicizing Law School activities, and sponsoring athletic and social programs.

The Duke Bar Association sponsors professional and social activities throughout the year. Dues are $15.00 per annum, payable in September.

Order of the Coif

A chapter of the Order of the Coif, national legal scholarship society, has been established at Duke University School of Law. Its purpose is "to foster a spirit of careful study and to mark in a fitting manner those who have attained a high grade of scholarship." Election is restricted to the ten per cent of the graduating class who have attained the highest records in their law school work.

Moot Court Board

A program of student Moot Court arguments is conducted under the supervision of the Moot Court Board as a part of the course in Research and Writing in which all first year students are required to participate. In addition, there is an intramural program for upper-class students from which a team is selected each year to represent the Law School in the National Moot Court competition.

International Law Society

Recognizing the importance of the role of law in international affairs, the Duke International Law Society provides a program for examining the application of international law to world problems. Through a series of lecture-discussions in the fall called "A Short Course in International Law" and by featuring distinguished speakers in the field throughout the year, the Society provides its members the opportunity to make contact with the men and ideas that are shaping the development of international law.

Other activities include participation in the annual Philip C. Jessup International Law Moot Court competition, attendance at conferences sponsored by the Association of Student International Law Societies, and entry into various writing contests.

Membership is open to all law students at $5.00 per annum.

Legal Research Program

The Legal Research Program is designed to provide students with the opportunity to prepare intensive legal memoranda on current problems submitted by practicing lawyers, judges or legislative committees. Supervised by an Editorial Board, the program provides students with meaningful experience in research, writing and editing, thus aiding in the development of practical legal skills.

Legal Fraternities

The two legal fraternities at Duke are Hughes Inn of Phi Delta Phi and Wiley Rutledge Chapter of Phi Alpha Delta. During the academic year,

these organizations sponsor luncheons and other meetings, which feature topics of professional interest, and a number of social activities.

Recreational Facilities

The University is located about two miles from the business district of Durham on wooded hills constituting part of the approximately 8,500-acre Duke Forest, which is maintained by the School of Forestry. Within a short distance from the campus are facilities for golf, horseback riding, and woodland hiking. Students of the Law School are entitled to the use of the University gymnasium, tennis courts, swimming pool, golf course, and similar privileges. Other opportunities for physical activity are available in the Intramural Program, as well as through such activity groups as the outing, sailing, and cycling clubs. Skiing has become increasingly popular. Several bowling alleys are available in and near Durham. Motion pictures are shown in Page Auditorium twice a week, and concert programs, recitals, lectures, and plays are presented frequently.

Publications

Law and Contemporary Problems

The School of Law publishes a quarterly, *Law and Contemporary Problems,* edited by Professor Clark C. Havighurst. This periodical, now in its thirty-second volume, presents in each issue a symposium on a problem of current importance, in which the inter-related social and economic, as well as legal, factors are discussed by writers of competence in these respective fields.

The circulation of *Law and Contemporary Problems* extends not only to members of the legal profession and law libraries throughout the country but also to industrial and financial concerns, governmental agencies, and public and general university libraries. Individual issues are frequently used as materials for study in University courses.

Editorial assistantships are available to second- and third-year students not writing for the *Duke Law Journal.* Individuals are selected for these positions on the basis of achievement and receive stipends for their work.

Duke Law Journal

American legal education boasts at least one unique institution. Only in America, and only in law, are the scholarly professional journals edited and largely written by students. The *Duke Law Journal* carries forward

this proud tradition, which dates from the latter part of the nineteenth century. Articles written by teachers, lawyers, judges, and other scholars are critically evaluated and edited by the board of student editors. Notes and comments concerning recent judicial, legislative, and other developments are written by the students themselves, and edited by their fellow students. Members of the faculty are of course available for advice and consultation. The six annual issues are widely circulated and become an integral part of the store-house of informal and critical materials to which the profession in all its branches must resort. The student-edited law journal has had a profound influence on the growth and development of the law.

Membership in the *Journal* is the highest honor that can be attained by the student, being reserved for those who not only excel in their courses but also demonstrate capacity to do creative research and writing. Moreover, in the well-nigh universal judgment of the profession, the experience gained in this work provides the best training that the Law School has to offer. It should be the aim of every qualified student to take advantage of this opportunity.

Corporate Practice Commentator

The *Corporate Practice Commentator*, a quarterly periodical devoted to significant developments and new thinking in the field of corporation law and practice, is edited by Dean F. Hodge O'Neal. Although the *Commentator* is published by a commercial concern, it is assembled and the manuscripts are prepared in the School of Law under the direction of Professor O'Neal. The *Commentator* gives attention to matters of interest and importance to counselors and managers of corporate and other business enterprises. Primary emphasis is placed on corporation law and practice in the narrow sense, but considerable attention is devoted to antitrust questions, labor matters, patents and copyrights, executives' compensation, fair trade legislation, and other matters arising from business activities.

Admission

Beginning students may enter only at the opening of the fall semester in any year. Students who have completed the first year of law study at this or any other law school approved by the Association of American Law Schools may enter at the beginning of any semester.

Procedures

Application must be made on the prescribed Law School application form which will be sent upon request. A fee of $10.00 is charged for processing an application. No applicant will be accepted until all required documents are on file. These documents are: (1) the application itself, to which a recent personal photograph must be attached; (2) a transcript of the college academic record; (3) a report of the applicant's score on the Law School Admission Test, described below; and (4) letters from an academic or student affairs officer for each college attended and from three or more responsible persons who are well acquainted with the applicant's character and general qualifications. *These letters will be requested directly by the Law School*, and the applicant need only furnish the names and addresses of persons from whom the desired information can be obtained.

Most of our applicants apply while they are still in college, either in the fall or winter of their current college year. The Law School does not ordinarily wait for the completion of the current year's college work

before admitting an applicant; normally it takes action on the basis of a transcript showing college work through the junior year although, at times, it may request a supplementary transcript showing also one term of the senior year. Such acceptance is subject to our final action taken in the light of the further supplemental transcript showing all the college work required for admission to the Law School. (However, it would be extremely rare for an accepted applicant to be rejected later on the basis of his completed transcript.) The suggested time for application by a student in college is the fall semester of his final year.

The Law School Admission Test, referred to above, is administered by the Educational Testing Service. It is given four times a year at examination centers conveniently located throughout the United States and at special foreign centers. The test administration date in the fall semester of the applicant's final year of undergraduate study is preferred, but not required. No special preparation for the test is suggested, since it is designed to measure aptitudes, abilities, and general background rather than knowledge of subject matter. The applicant's score on the test will be considered along with other data in passing upon his admission to the Law School. Application forms and information should be procured by writing directly to the following address: Law School Admission Test, Educational Testing Service, Box 944, Princeton, New Jersey 08540.

Personal interviews are recommended, but not generally required. Whenever possible, a visit to the Law School is especially helpful both to the applicant and the committee on admissions.

Requirements for Admission

An application for admission to Duke Law School as a candidate for the degree of Juris Doctor may be submitted by any person who is a graduate of a college of approved standing. Applications may also be submitted by a candidate without a prior baccalaureate degree if he has completed in a college of approved standing work equivalent in number of units to three-fourths of that required for graduation and whose college work is of unusually excellent quality and in its entirety shows an average grade far above that required for graduation, the requirement in each case being determined by the regulations of the college where the work was taken. Graduates who have been admitted under this latter provision will be awarded the degree of Bachelor of Laws (LL.B.)

Admission of Students in Combined Course Program

A number of colleges, upon application by their students, have permitted those who have completed three years of undergraduate work to enter the Duke Law School and upon the satisfactory completion of the first year of law school work to receive their Bachelor of Arts degree from

such colleges. It is suggested that students desiring to enter Duke Law School under such a program make inquiry of their proper college authorities regarding this point if they meet the applicable requirements for admission. A student from an undergraduate college of Duke University who has completed therein three years of study may apply to that college to enroll in a combined course wherein his first year of law study may be accepted toward the Bachelor of Arts degree.

After receiving the Bachelor of Arts degree and completing four additional semesters of law study, a student in the combined course program will receive the degree of Juris Doctor. However, not over three per cent of an entering class is admitted on this basis.

Students considering entrance before obtaining the Bachelor's degree should consult the rules of the Board of Bar Examiners in the state where they plan to practice law, for regulations applicable to this program.

Admission to Advanced Standing

Any person who has complied with the requirements for admission set forth in this announcement prior to the commencement of his law study, who presents evidence of the satisfactory completion of at least one year of study at any law school which is a member of the Association of American Law Schools, and who is eligible for readmission to the law school from which he proposes to transfer, may be admitted to advanced standing, subject to such rules as would be applicable to students in this School having a comparable scholastic record. Provisional credit for courses so completed will be given, final credit being conditioned on the completion of at least one full year of law study in this School with an average at least five points above the passing grade. Adjustment of credit for work done in such other law schools may be made by the Dean or by vote of the faculty.

Admission of Candidates for Graduate Degrees

Applications for admission to graduate study should be addressed to the Dean of the Law School and should include transcripts of records of legal and prelegal work. (See section on graduate degrees, pp. 6-8.)

Master of Laws Degree

Any person who has received the first degree in law from a law school which is a member of the Association of American Law Schools, or from a university in the United Kingdom of Great Britain and Northern Ireland, or in Australia, Canada, Eire, or New Zealand, may be admitted as a candidate for the degree of Master of Laws, provided he satisfies the Committee on Graduate Study that his objective in desiring to do graduate

work in law is consistent with the purposes for which the program is offered, and provided he demonstrates to the Committee, on the basis of his record, his capacity to take and profit by graduate work in law. Normally the applicant will be required to show a level of scholarship appreciably higher than that required for the first degree in law at the institution from which he received that degree. Those applicants who aspire to a teaching career are expected to have had, and are expected to maintain throughout their graduate studies, an exceptionally high academic record.

Master of Comparative Law Degree

Any person (1) who has received the degree of *doctor iuris* or its equivalent from a foreign university, or (2) who, having completed such academic training as is required in his country for the practice of law, has already demonstrated his special qualifications by publications in learned journals or otherwise, and who has the knowledge of and facility in the English language needed to achieve distinction in competitive study at an American university may be admitted as a candidate for the degree of Master of Comparative Law (M.C.L.). The applicant must satisfy the Committee on Graduate Study that his objective in doing graduate work in comparative law is consistent with the purposes for which the program is offered, and he must further demonstrate to the Committee, on the basis of a scholastic record comparable to at least a B average at an American law school of high standing, and by his previous publications, if any, his capacity to profit by graduate work in law. Normally, admission to candidacy for this degree is limited to applicants who intend to study one or more specific fields of American law with a view to utilizing such knowledge upon their return to their respective countries, and who have already done some preparatory work in this direction.

Any person eligible to be admitted as a candidate for the degree of Master of Laws may, upon recommendation of the Committee on Graduate Study, be admitted to candidacy for the degree of Master of Comparative Law.

Doctor of Juridical Science

A person holding the degree of Master of Laws or Master of Comparative Law (or Jurisprudence) from this or any other law school which is a member of the Association of American Law Schools may, on recommendation of the Committee on Graduate Study and favorable vote of the faculty, be admitted to candidacy for the degree of Doctor of Juridical Science (S.J.D.), provided he completed the work for the Master's degree with distinction.

Financial Information

Fees and Expenses

It is estimated that the expenses of a thrifty unmarried student at Duke Law School, aside from tuition, will range between $700.00 and $850.00 per semester.

Tuition

Tuition is due and payable not later than the day of registration for a particular semester. For the academic year 1968-69, the tuition is $800.00 a semester. After the final day of registration no refund of the tuition will be made except for involuntary withdrawal to enter military service.

Registration Deposit

Admitted applicants are required to deposit the sum of $50.00 with the Office of the Bursar. Except for involuntary withdrawal to enter military service, this deposit is nonrefundable but will be credited to the account of the matriculated student.

Living Accommodations

Housing.* The Graduate Center is available to men and women enrolled in the Law School. Most rooms are equipped for two persons and

*Information pertaining to residence halls and Duke University Apartments is subject to change prior to September, 1968.

the rental charge for a double room is $325.00 for the academic year for each occupant ($162.50 per semester for each occupant). The charge for single room occupancy is $420.00 for the academic year ($210.00 per semester).

Women may also reside in the Town House Apartments which are complete with basic furnishings, utilities and maintenance. Three persons occupy each apartment. The rental charge for the academic year is $495.00 for each occupant ($247.50 per semester).

Duke University Apartments, which consist of efficiency and one- and two-bedroom apartments, are available to married law students. The apartments are complete with basic furnishings and the current rental charges per month are $70.00 for the efficiency, $90.00 for the one-bedroom, and $110.00 for the two-bedroom apartments.

Room Deposit. A $25.00 deposit is required of each applicant before a residence hall room reservation is made. The initial room deposit is effective during the student's residence in the University residence halls if attendance is continuous in regular academic years.

Refund. The deposit will be refunded under the following conditions:

1. Within thirty days after the student has been graduated provided written notice is received at the Office of Housing Management requesting refund.
2. Upon withdrawal from Duke University Residence Halls by students enrolled on the semester basis, provided written notice is received by the Director of Housing Management by August 1st for cancellation of a reservation for the fall semester, and not later than January 15th for cancellation of a reservation for the spring semester.
3. When the reasons requiring withdrawal are beyond the student's control.

No refund will be made until the occupant has checked out of his room through the Housing Office and has settled his account with the Bursar.

Rooms are rented for the academic year but for no period of less than one semester without special arrangements. After the day of registration, no refund of room rent will be made except for involuntary withdrawal to enter the military service. Such refunds will be made in accordance with the University's established schedule. Regulations governing the occupancy of rooms will be supplied by the Director of Housing Management to those students who make application for housing.

Food Service. Food service is cafeteria style. The cost of meals runs approximately $2.50 to $3.00 per day, depending on the need and taste of the individual. The dining facilities on the West Campus include three cafeterias, a grill, and the Oak Room with table service. In the Men's Graduate Center there is a cafeteria and a Coffee Lounge. The prices in these dining rooms are the same as on the West Campus.

Late Registration Fee

Students who register in any semester at a date later than that prescribed are required to pay to the Office of the Bursar a $5.00 penalty for late registration.

Athletic Events Fee

Law students may secure admission to all regularly scheduled University athletic contests held on the University grounds during the entire academic year by payment of the athletic fee of $15.00 per year plus any taxes that may be imposed. (This fee is payable in the fall semester.) They also may use the facilities of the Duke Golf Course upon payment of student green fees.

Motor Vehicle Registration Fee

Each motor vehicle operated on the campuses by students enrolled in the School of Law must be registered at the Traffic Office in the Social Science Building, and a $30.00 annual registration fee ($10.00 for two-wheeled vehicles) must be paid at this time by those who reside on campus.

Student Aid

Scholarships

Scholarships are available, varying in amount. Except for a few scholarships that are based purely on merit, scholarships are awarded only to needy applicants with markedly superior college records and comparable Law School Admission Test scores. A scholarship may cover all or part of the tuition charge. The more usual form of financial aid is a combination of scholarship and loan. Scholarship grants will be continued to second- and third-year students maintaining a high standard of work.

Loans

Prospective law students who will need loan funds to help finance their education should apply immediately following their acceptance for admission.

To the extent of the funds allocated to Duke University from its participation in the student loan program established under the National Defense Education Act, loans up to $2,000 per year (so limited as of the present writing) are available to Duke students. Interest on these loans begins to accrue at three per cent nine months after the student leaves

the School, and repayment normally begins ten months after the student leaves the School, with complete repayment scheduled over a period up to ten years.

Some states have now established guaranteed loan programs with similar terms for graduate and undergraduate study by their own residents. In keeping with policies of the University Student Loan Office, a student from such a state will be asked to apply first to the appropriate state agency. The Law School will supply information regarding any particular state and will make appropriate certifications in support of the loan application. If loan funds prove unavailable through the state guaranteed loan program, the student should apply directly to Duke University.

Loans from funds held in trust by the University are also available to qualified law students. Interest on these loans, which mature after the student has left the School, accrues from the date of each note at the rate of one per cent until the student has left the School and for five years thereafter at three per cent per year, with repayment in installments over the five-year period. Loans from these funds are available up to $1,200 per year, less the amount of any loan made under the paragraph above.

Approval of a loan application is based on the financial need, satisfactory scholastic standing, and personal integrity of the applicant.

In addition to the loans above mentioned, the School participates in the American Bar Association Loan Fund and United Student Aid Fund programs. These programs provide guaranteed commercial bank loans to needy law students, up to $1,500 per year.

A special fund is also available to law students for small loans to meet temporary financial emergencies arising during the course of the year.

Registration and Regulations

Registration

All students are required to register on the dates prescribed in the Law School Calendar, at which time class schedules and course cards must be completed and approved. A student's registration for any semester is not complete until he has settled all indebtedness with the Office of the Bursar.

A student may alter his registration by enrolling in or withdrawing from a course during the first week of the semester. Thereafter, no further enrollment will be permitted, and withdrawal from a course is allowed only with the consent of the instructor.

Academic Regulations

Course Requirements

Minimum and Maximum Student Loads

No regular student is permitted to take less than twelve course hours per semester. No first-year student may take courses in excess of the first year program. Second- and third-year students are not permitted to take for credit more than sixteen course hours per semester, nor

to audit and take for credit more than seventeen course hours per semester.

In exceptional cases, with the consent of the Dean a student may take more or less than the prescribed maximum or minimum loads, but no student shall receive full residence credit if he takes fewer than the ten hours per semester for credit required for approved schools by the American Bar Association.

Scholastic Standards

Eligibility to Continue Law Study. Any student who at the end of his first year or at the end of any subsequent semester has an average grade lower than D on all the work then taken is ineligible to continue his work in the School. Any other student (1) whose average final grade at the end of his first semester is below D, or (2) whose average grade at the end of any subsequent semester on all the work then taken is below C, or (3) who in any single semester or in any single year receives failure grades in courses totaling eight or more semester hours, may at any time be declared by the Dean ineligible to continue.

Notification of Unsatisfactory Scholastic Standing. Every student subject to the provisions of the second sentence of the paragraph above, who has not been declared ineligible to continue his work in the School will be given a formal, written notice by the Dean's Office. This notice will set forth his average grade or grades and inform him (1) that he will be subject for the ensuing year to the special supervision of the Dean, who may order his dismissal from the School in the event of his failure to maintain a satisfactory scholastic standard, and (2) that he will be ineligible to receive a degree unless his work meets the scholastic requirements for graduation, which will be set forth in full in such notice.

Every other student whose average final grade at the end of any semester on the work of that semester, or on all work then taken, does not exceed the minimum average grade required for graduation by more than two points will be given a notice similar to that provided for above.

Attendance Regulation

Regular class attendance is required. The right to take the examinations, as well as the privilege of continuing one's study in the School of Law at any time, is conditioned upon regular attendance at the exercises of the School.

Nonacademic Regulations

Motor Vehicles

Each motor vehicle operated on the campuses by students enrolled in the School of Law must be registered at the Traffic Office within 5 days after arrival, and thereafter must bear the proper registration emblem. To register a vehicle, the student must pay the prescribed fee (see page 23) and present the following documents:

1. State vehicle registration.
2. State operator's license.
3. Evidence of automobile liability insurance as required by North Carolina law: $10,000 per person and $20,000 per accident for personal injuries, and $5,000 for property damage.

Parking, traffic, and safety regulations will be given each student registering his vehicle. Students are expected to abide by these regulations.

Conduct of Students

All students are admitted subject to the rules of the University and of the Law School, and continuance in the School is conditioned upon the observance of such rules.

The honor system of Duke Law School demands of each student the highest standards of academic and professional conduct, subject to the judicial code promulgated by the students and approved by the faculty.

Registration for Bar Examination

Many states now require that a student, prior to or shortly after beginning the study of law, register with the board of bar examiners of the state if he intends to practice therein. Each student should ascertain by writing to the secretary of the board of bar examiners of the state in which he plans to practice, or by other channels of information, whether that state makes this requirement.

School of Medicine and Medical Center

Table of Contents

General Information 1
Courses of Study and Requirements for Degrees 4
The New Medical Curriculum 4
Doctor of Medicine Degree 5
Combined M.D.-Ph.D. Training Programs 8
Medical Historian Training Program 13
Medical Scientist Training Program 8
Resources for Study 16
Medical Center Library 16
Duke Hospital 16
Veterans Hospital 17
Teaching and Research Facilities 17
Audiovisual Education 18
Student Life 20
Living Accommodations 20
Services Available 21
Student and Professional Organizations 22
Financial Information 26
Fees and Expenses 26
Housing 27
Motor Vehicle Registration 30
Financial Aid 30
Admission 34
Application for Admission 34
Requirements for Admission 35
Selection 35
Advanced Standing 36
Summary for Applicants 36
Regional Representatives of the Committee on Admissions 37
Courses of Instruction 39
Health Related Professions 74

General Information

In 1924, James Buchanan Duke established The Duke Endowment, and thus made possible the creation of Duke University.

> I have selected Duke University as one of the principal objects of this trust because I recognize that education, when conducted along sane and practical, as opposed to dogmatic and theoretical lines, is, next to religion, the greatest civilizing influence.
>
> I have selected hospitals as another of the principal objects of this trust because I recognize that they have become indispensable institutions, not only by way of ministering to the comfort of the sick, but in increasing the efficiency of mankind and prolonging human life. . . . I very much hope that the people will see to it that adequate and convenient hospitals are assured in their respective communities . . . . It is to these rural districts that we are to look in large measure for the bone and sinew of our country.

In Item VIII of his will, Mr. Duke bequeathed to The Duke Endowment ten million dollars for Duke University, of which four million dollars was to be expended for a medical school, hospital, and nurses' home at Duke University.

Wards and clinics were named for eminent physicians and surgeons in order to remind the staff and students of what has been accomplished in medicine, as well as to follow Mr. Duke's Indenture: "I advise courses in history, especially the lives of the great of the earth."

The Council on Medical Education and Hospitals of the American

Medical Association gave Duke Class A approval in 1929 before the faculty and buildings were completed.

Announcements were then inserted in college papers that applications for the study of medicine, nursing, dietetics, hospital administration, and other health professions would be considered in 1930.

Duke Hospital was opened for patients on July 21, 1930. The first students in hospital administration were admitted on July 1, 1930; the first dietetic student on August 15, 1930; the first medical students (1st and 3rd year) on October 2, 1930; and the first student nurses on January 2, 1931. The schools and hospital were dedicated on April 20, 1931.

On the advice of Dr. Harvey Cushing and Dr. Henry A. Christian of Harvard, most of the faculty were appointed on "geographic" full time, so that private patients could obtain as good medical and surgical care as that given to the charity patients. Therefore, on September 15, 1931, the Private Diagnostic Clinic (PDC) was organized to improve the facilities for private patients, especially for those of moderate means.

Soon other additions became necessary, as students, faculty, and patients increased in numbers. The Baker House (originally for nurses, 1932) and the PDC wing (June, 1940) were provided by The Duke Endowment and Duke University. The W. B. Bell Research Building was started in 1940 with funds from the PDC, the Rockefeller Foundation, the Dorothy Beard Research Fund, and The Duke Endowment and was expanded by funds from the National Institutes of Health, the Markle Foundation, and Duke University. The Erwin Road Nurses' Dormitory (now Hanes House Annex) was built (1943) with funds from The Duke Endowment and the U. S. Public Health Service. The Elizabeth P. Hanes House for Nurses (1950) was a gift from Mrs. Frederic M. Hanes, with additional funds from the N. C. Medical Care Commission. The North Carolina Cerebral Palsy Hospital, which is directed by Duke, was dedicated on March 30, 1950. The Durham Veterans Administration Hospital, which is affiliated with Duke, was completed and dedicated in 1953. The W. S. Rankin Outpatient and PDC wing (1954) were financed by the PDC, The Duke Endowment, and the N. C. Medical Care Commission. The Geriatrics and the Diagnostic and Treatment wings (1963) were built with funds from the National Institutes of Health, the PDC, and The Duke Endowment.

Today, Duke University Medical Center continues to strive to lead and not lag the contemporary medical scene. This involves maintaining superiority in its four primary functions: unexcelled patient care, dedication to its educational programs, national and international distinction in the quality of its research, and service to the region.

Growth is identified with a deeper involvement in the social aspects of health, the establishment of many advanced therapeutic and research facilities, a building program that will require one or more decades for its



completion, and a new and imaginative revision of the medical teaching program that has attracted the attention of educators across the globe.

In the years to come, Duke University Medical Center will continue to adapt, experiment, and innovate in all aspects of its functions, basing changes upon its traditions and upon its aspirations for service to mankind everywhere.

Courses of Study and Requirements for Degrees

The New Medical Curriculum

In recent years, analysis and appraisal of the curriculum in medical schools has caused changes in many. Several factors have required these changes, important among them being the increasing scope and complexity of medicine generally, and the dissatisfaction with the sharp cleavage between basic science and clinical years. As a result of long study, the Duke University School of Medicine instituted a major revision of the curriculum beginning with the class starting in the Fall of 1966.

The aims of the present curriculum are: (1) to provide a strong academic basis for a lifetime of growth within the profession of medicine, with the development of technical competency, proficiency, and the proper attitudes peculiar to the practice of medicine as well as appreciation of the broader social and service responsibilities; (2) to establish for the first year a basic science program which will fulfil the purposes of the increasingly heterogeneous student body; (3) to offer both clinical and basic science education simultaneously; (4) to permit the student to explore his personal intellectual preferences and capabilities; (5) to allow study in depth in selected areas, either clinical or basic science; (6) to provide greater freedom of course selection and thus to encourage earlier career decision; and (7) to achieve better

integration of the medical school curriculum with residency training and the practice of medicine.

The curriculum, while offering a previously unattainable degree of flexibility to medical education and new opportunities for intellectual exploration, also makes heavy demands upon the student. It should be recognized that a medical student at Duke University School of Medicine is expected to maintain a consistent level of attainment and to demonstrate qualities of initiative and dedication to his chosen profession. A scholarly attitude to medicine that will continue throughout an entire career is an important objective of the medical school. The foundations of this attitude to learning should accompany the student when he enters.

It is expected that students will dedicate daily several hours to private study, utilizing the resources available in the Medical Center library and those provided by themselves and by other facilities of Duke University. During the University term, private study should also occupy part of each weekend.

The curriculum calls for major contributions of independent effort and individual initiative from the first day of medical school onward. Members of the medical school faculty should be regarded not as the teachers of didactic information but as guides to learning, whose opinions may be questioned in sincerity.

A student is expected to maintain at all times a professional attitude toward patients, to respect confidences and to recognize that he is the recipient of privileged information only to be discussed within the context of scholarship and in circumstances that truly contribute to the educational process or the care of the patient. This attitude involves consideration not only of speech and dress but also of morality, honor, and integrity.

A special examination will be taken annually by all medical students. The examination, comprising two 3-hour papers, is administered on a single day each year. Freshmen medical students take this examination on the second day of medical school, in addition to subsequent examinations in May. Grade weighting is attached to these examination results and will be recorded in each student's record. In addition all students are required to take Part I of the National Board Examinations at the end of their third year of medical school.

Doctor of Medicine Degree

The degree of Doctor of Medicine is awarded upon approval by the faculty of Duke University to those students who have completed the curriculum of the School of Medicine to the satisfaction of the Medical School Advisory Committee, and who have demonstrated their fitness to

practice medicine by adherence to a high standard of ethical behavior and morality and paid or made satisfactory arrangements to pay all indebtedness to the University.

Course Requirements

First Year

The student will study the principles of all the basic science disciplines. Rather than mastering an encyclopedic array of facts, the purpose will be to acquire familiarity with the major principles of each subject. An introduction to clinical medicine, will be presented by the clinical services. The year will be divided into two terms, each of eighteen weeks, as follows:

Term 1	*Hours*
Anatomy	198
Biochemistry	157
Physiology	116
Human Behavior	40
Basic Neurological Sciences	92
Orientation	6
Free Time (Study, etc.)	124
	733

Term 2	*Hours*
Pathology	217
Microbiology	147
Pharmacology	121
Human Behavior	13
Introduction to Clinical Medicine	96
Genetics	32
Free Time (Study, etc.)	142
	768

Second Year

The second year will provide an exposure to clinical science disciplines permitting the student early in his career to become a participant in the care of patients. The acquired appreciation of the problems of the clinical areas and the opportunities to recognize the applications of the basic sciences should lead to a more meaningful selection of courses for the subsequent two years. The second year will be divided into five terms of seven weeks each as follows:

Medicine	7 weeks
Obstetrics	7 weeks
Pediatrics	7 weeks
Psychiatry	7 weeks
Surgery	7 weeks
Community Health Sciences	70 hours
Radiology	72 hours
Emergency and Disaster Surgery	44 hours

Third and Fourth Years

These two years will be made up of elective courses, as flexible as possible within requisite limitations. Each student will have a personal adviser and professional advisers from the preclinical and clinical faculties. These individuals will assist the student in formulating his program for the third and fourth years. Approximately one-half the time will be spent in basic science and one-half in clinical science. Completion of the Medical Research Training Program may fulfil the requirements for basic science.

The elective courses of study offered are described under each department. The combinations are too varied to be enumerated. The wide selection, however, affords an opportunity for each student to design his program to satisfy best his needs in conformity with his medical future, with guidance from his advisers.

As an alternative after completion of the second year, the student may enroll as a Ph.D. candidate in one of the basic sciences, earning this degree in two or three years. Then, having completed three of the four years necessary for an M.D., he may earn the M.D. degree by completing a fourth clinical year.

The third and fourth years will be divided into four terms of nine weeks each. Certain courses as noted will be offered during the summer term.

Promotion

The records of each student in the first and second years are reviewed periodically by promotion committees, which are made up of the department chairmen. The Medical School Advisory Committee acts on recommendations from these promotion committees and may:

1. Promote to the next year those students whose work is good.
2. Warn those students whose work is less than good that they must improve their scholastic endeavor.
3. Place on probation those students whose work is poor.
4. Request the resignation of any student who is considered an unpromising candidate for the degree of Doctor of Medicine.

A student wishing to appeal a decision may do so to the Dean within two weeks of his notification.

The Dean, with the advice of the Medical School Advisory Committee, reserves the right to require the withdrawal of any student at any time if, in the opinion of the majority of committee members, he should not continue his course.

At the end of the third year, each student will be required to take Part I of the National Board Examinations.

Combined M.D.-Ph.D. Training Programs

Medical Scientist Training Program

General Information

The Medical Scientist Training Program is conducted under the auspices of the School of Medicine and the Graduate School of Arts and Sciences and is designed for highly qualified students strongly motivated toward a career in medical sciences. It will provide them with the opportunity to obtain a graduate education in one of the medical sciences while providing exposure to clinical medicine. The program will require six to seven years of study and will lead to both an M.D. and a Ph.D. degree. While the emphasis of this program is on basic medical science, the students, because of their clinical training, will have open to them a remarkable range of career opportunties. It is probable that the graduates of the Program will follow one of two broad paths. Some will embark directly on careers in teaching and research in one of the basic medical sciences, hopefully having acquired some understanding of clinical medicine in this Program. Others will enter residency programs with a background of experience in basic science which will allow them to pursue research careers in clinical medicine without the frustrations due to inadequate training in the basic medical sciences.

Eligibility

Applicants must meet the requirements for admission to both the Medical School, as a candidate for the M.D. degree, and the Graduate School of Arts and Sciences, as a candidate for the Ph.D. degree. It is anticipated that most of the candidates will apply for admission as a first year student, but applications will be accepted from students who are in residence.

In addition to the minimum requirements established by the prior acceptance into the Medical School and the Graduate School, additional

course work in science and mathematics as well as previous research experience will count heavily in the selection of candidates.

Financial Support

Those students accepted will be offered a traineeship award (MSP trainee) which will include a stipend plus a full tuition allowance. The stipend levels are equivalent to the current U.S. Public Health Service predoctoral and postdoctoral fellowships, and an MSP trainee will be supported until he has completed both degrees, as long as his progress is satisfactory. These stipends include a dependency allowance of $500.00 per dependent. The stipend levels for a seven-year program begin at $2,400.00 with yearly increments to $6,000.00 per year, plus any dependency allowance.

Candidates may also participate as students in the Medical Scientist Training Program without receiving one of the special traineeship awards. Details of the alternate awards will be discussed with candidates on an individual basis.

The Training Program

This program has been designed to offer the student great latitude in the selection of his course material, but the basic requirements will be those described in the following example of a typical program. In a typical program, the first two academic years are the core basic science year and the core clinical science year of the new curriculum for medical students at Duke University. At the completion of the second year, the student enters the graduate program. Following the completion of the requirements for the Ph.D., the student needs one more academic year of clinical training to complete the requirements for the M.D. degree.

Year 1—Core Basic Science Year. This year is made up of core material in the basic sciences of Anatomy, Biochemistry, Genetics, Microbiology, Pathology, Pharmacology, and Physiology, in addition to an introduction to clinical methods. The students in the Medical Scientist Training Program will work together throughout this first year and will have an opportunity to work closely with one another as well as with the advisors assigned to this group. At the end of this first year, the student will be familiar with each of the basic sciences and will be in a good position to select his field of graduate study. The summer following the first year can be used in one of two ways: one, the student may spend this time taking additional background courses in mathematics, chemistry, or other fundamental sciences; or two, he may elect to begin his graduate study and/or research.

Year 2—Core Clinical Science Year. A comprehensive approach to medicine, oriented to the patient as a whole, will be the basis for the

second year curriculum for the medical scientist. During this year, which represents the student's first introduction to clinical medicine, the focus will be upon the total human biological unit rather than upon separate organ systems. The curriculum will be "vertically" integrated, multidisciplinary, and interdepartmental. Stress will be placed upon the continuity of biological processes—from conception through birth, development, and maturation to senescence and death. Special consideration will be given to the pattern of this developmental sequence in the individual, and to the changes in the pattern determined by genetic composition and by alterations brought about through the action of the particular environment in which the patient lives.

During this year the trainee will be primarily taught by one specific group of teacher-investigators from the clinical departments. The program will consist of a special series of seminars and demonstrations plus clinical experience. The clinical experience will parallel the seminar series insofar as possible. For convenience in description, these clinical experiences have been roughly divided into periods. In practice, the entire year will be organized as a unit both in the seminar and the clinical work.

The initial six weeks will be devoted to Obstetrics and Gynecology, with its considerations of the adult woman, sterility and infertility, conception, maternity, and birth. Two weeks will then be given to a combined interdisciplinary effort between the Departments of Pediatrics and Obstetrics in the area of maternal fetal interaction, birth, and the perinatal period.

The next six weeks will be devoted to Pediatrics, with emphasis upon normal development and the aberrations caused by disease. Time will then be allotted to a combined effort of all departments in the area of adolescence, including such social problems as juvenile delinquency.

Medicine, Surgery, and Psychiatry will cooperate in the teaching program during the last 21 weeks of the year. Selected patients from these services will be maintained on a "mixed" ward to facilitate and improve this phase of the student's clinical experience. The different types of patients also provide an excellent opportunity for psychologists, social workers, and others to demonstrate the importance of their respective disciplines and attitudes for these patients. Finally, during the terminal weeks of the year, the student will be given the opportunity to appreciate the problems of senescence and the impact of chronic disease upon the individual and his family.

Years 3, 4, and 5—The Graduate Years. During the third, fourth, fifth, and, if necessary, the sixth year of the Program, the student will pursue graduate study in order to satisfy the requirements for the Ph.D. degree. These requirements include: (1) completion of the necessary coursework, (2) adequate performance in the preliminary examination, (3) original

research suitable for a dissertation, and (4) successful defense of the thesis in the final examination. Detailed description of other general requirements for the Ph.D. degree (e.g. competence in two foreign languages) are set forth in the *Bulletin of the Graduate School of Arts and Sciences.* The standards of performance during this period will be determined by the individual departments concerned. Further details concerning the individual departments may be obtained by writing to the Director of Graduate Studies in a given department.

The graduate curriculum of each student will be worked out in consultation with the Director of Graduate Studies of the department in which the student chooses to work and will require the approval of the Medical Scientist Training Committee. Since most of the ordering ideas and experimental techniques of all of the medical sciences derive from mathematics and the physical sciences, it is essential to ensure that all students in the program have an adequate grounding in these subjects. Because of the close working relationship and geographical proximity of the medical sciences and physical sciences departments at Duke, the setting is unusually favorable for the achievement of that goal.

If the student has not completed a study of differential and integral calculus, including one course in differential equations, he will be required to do so early in his graduate career. This also holds for students who have not had a rigorous course in Physical Chemistry. In addition to the aforesaid courses which are recommended for all students in the Program, selected students, depending upon their interests and talents, will be encouraged to take additional course work in the Departments of Mathematics, Physics, Chemistry, and Electrical Engineering.

Descriptions of graduate courses in the Departments of Anatomy, Pathology, Microbiology, Biochemistry-Genetics, and Physiology-Pharmacology are listed in the *Bulletin of the Graduate School of Arts and Sciences.* Students will be encouraged to select courses which are relevant to their own developing individual interests rather than according to a prescribed program which is applied to all students in a given discipline. It is our view that such range, flexibility, and freedom are the essence of graduate education.

The original research and dissertation of each student will be supervised by a faculty advisor chosen by the student in consultation with the director of graduate studies in his department. It is not required that the faculty advisor be a member of the department in which the student will take his degree. For example, a student in the Department of Biochemistry could choose an advisor in the Department of Microbiology; a student in the Department of Physiology, an advisor in the Department of Zoology, and so on, provided that the plan meets with the approval of all concerned. The faculty advisor is the chairman of the student's supervisory committee which must consist of at least three members of the major department. This committee generally administers preliminary

(before commencing original research) and final (after completion of dissertation) examinations for the student.

Terminal Year—An Elective Year in Clinical Science. The student will be assigned an advisor from the clinical department in which he is most interested. Together they would construct a highly individualized training plan for that particular student and one that would have a major emphasis relative to the chosen clinical area as well as a minor emphasis in one other field. The integration of research and clinical experience will be carried out in such a way that the student's research competence will be facilitated rather than lost. Therefore, this year will be planned with due regard to the trainee's proposed career in research. This year would give the trainees in the Medical Scientist Training Program further training in clinical medicine and would complement the second or core clinical year, so that the trainee's total clinical experience would approximate that now given in the regular clinical years of medical school (the third and fourth years in the majority of schools). It should be noted that since these students will receive the M.D. degree upon completion of this final year, great care will be taken by the faculty to insure that the student will be well grounded in the present day concepts of patient care.

Parenthetically, it is hoped that the student's last year would give the student an experience which will not be repeated later during his internship. Rather it should serve to complement these phases of his training. Ideally, the future surgeon, for example, should be exposed to fields other than surgery, since he will receive intensive training in surgery during his residency. The student usually will be tempted to enter immediately upon the area of his primary interest (e.g. surgery). It is partially to offset this tendency that it is stipulated that a student should take a major and minor subject and that the final-year program should be arranged through consultation by the student with his faculty advisor.

Application and Admission Procedures

1. Complete the application form for the Duke University School of Medicine.
2. Complete the application form for the Medical Scientist Training Program.
3. After preliminary screening, selected candidates will be asked to submit an application to the Graduate School of Duke University.
4. A member of the Medical Scientist Training Committee will be available to furnish further information to applicants interviewed at Duke. Applicants will be notified of their status not later than January 10.

Further information can be obtained by writing to: Associate Director, Medical Scientist Training Program, Department of Biochemistry, Box 3711, Duke University Medical Center, Durham, North Carolina 27706.

Medical Historian Training Program

General Information

The Medical Historian Training Program is conducted under the auspices of the School of Medicine and the Graduate School of Arts and Sciences and is supported by the Josiah Macy, Jr. Foundation. It is constructed to provide professionally trained medical historians to fill some of the shortages of teachers and research workers that exist in universities throughout this country, and it is intended to provide a unique training opportunity for a small number of highly selected students who anticipate careers in the fields of medicine and medical history. A minimum of six years of graduate study is required, with successful completion leading to both the Doctor of Medicine and Doctor of Philosophy degrees. It is anticipated that graduates of the program will undertake at least one year in postgraduate medical training before embarking on careers in the history of medicine.

Eligibility

Applicants must meet the requirements for admission to both the School of Medicine as a candidate for the M.D. degree and the Graduate School of Arts and Sciences as a candidate for the Ph.D. degree in the Department of History. Applications will be accepted from candidates who wish to enter the program in the first year of medical studies.

In addition to the minimum requirements established by the School of Medicine and the Graduate School, additional course work in history and the history and philosophy of science will count heavily in the selection of candidates.

Financial Support

Students accepted will be offered a traineeship award which includes a stipend and a full tuition allowance.

The award, which will support the trainee throughout a six-year combined program as long as his progress is good, includes allowances of $500 per annum for each dependent and limited travel expenses to attend meetings in the history of medicine. Stipend levels (exclusive of allowances) begin at $2400 per year, and annual increments raise this to a maximum of $5500.

The Training Program

The program has been designed to offer the student a great latitude in the selection of his course material, but the basic requirements will be those described in the following example of a typical program.

During the first two academic years, full-time courses in the School of Medicine will be followed. The first year comprises the "core" basic science year and the second the "core" clinical science year. At the end of the second year the student enters the graduate program.

Typically, a candidate for the Ph.D. degree in history devotes approximately two full years to the completion of his required courses, work in seminars, writing an M.A. thesis, and in preparatory study for his preliminary or qualifying examinations. The actual length of time needed to earn the Ph.D. degree depends upon the number of months beyond this two-year period a candidate finds it necessary to devote to research and the writing of his dissertation. The candidate will pursue these studies in the Department of History during the third and fourth academic years of the program.

In the fifth and sixth years, the trainee will return to medical studies and follow the very flexible elective program offered in the third and fourth years of the curriculum of the School of Medicine. During this time a total of up to one quarter can be made available for completing the Ph.D. degree in history. Elective credit for this period will be accepted toward completing the requirements for the M.D. degree.

The original research and dissertation of each student will be supervised by a faculty advisor chosen by the student in consultation with the director of graduate studies in the Department of History. It is not required that the faculty advisor be a member of the department in which the student will take his degree; therefore, it is possible for a student to undertake dissertation work at another institution in this country or abroad. If the personal interests or required research of the individual student demand work away from Duke for any considerable period of time, the anticipated schedule for completion of the double-degree program may be somewhat extended; but it is anticipated that a total of six years will normally prove adequate.

Following the sequence described above, a candidate could complete the requirements for the M.A. degree in history by the end of the fourth academic year of the program. By the end of his sixth year, he could receive both the M.D. and Ph.D. degrees.

Students in the program will be expected to devote the summer following completion of their first year in medical school working in some aspect of the history of medicine to prepare for the regular course work in history that will begin in the third academic year of the program.

Application and Admission Procedure

1. Complete the application form for the Duke University School of Medicine.
2. After preliminary screening, selected candidates will be asked to submit an application to the Graduate School of Duke University for admission to the Department of History.

3. Customarily, the selection of the trainees will be made from a group of finalists who will be interviewed at Duke University. Applicants will be notified of their status not later than January 10.
Application forms and further information may be obtained by writing to the Associate Director, Medical Historian Training Program, Box 3005, Duke University Medical Center, Durham, North Carolina 27706.



Resources for Study

Medical Center Library

The Medical Center Library, located in the Davison Building, attempts to provide all services and collections necessary to further educational, research, and clinical activities in the medical field. Extensive reference and bibliographical services are provided. The collection exceeds 80,000 volumes and 1600 periodicals are received currently. *Director, G. S. T. Cavanagh; M. Jones, C. McDaniel, W. Bird, M. Brown, J. Woodburn, E. Wheeler*

The Trent Collection in the history of medicine is an unusually fine one, rich in manuscripts and rare books, and providing opportunity for study and research as well as casual reading in the field. *Curator, G. S. T. Cavanagh, Assistant Curator, Susan C. Smith*

Duke Hospital

Duke Hospital is an integral part of the Medical Center and currently has 700 beds and 23 bassinets. The hospital performs the dual functions of professional education and patient care. Comprehensive diagnostic and treatment facilities are provided. Different levels of patient care are provided, ranging from the intensive nursing unit, through the conventional nursing sections to a minimal care unit. Private, semiprivate, and

ward accommodations are available. Over 20,000 patients are admitted each year. The approximate daily census by service is as follows: Surgery, including the surgical subspecialties, 270; Medicine, 170; Pediatrics, 55; Psychiatry, 50; and Obstetrics-Gynecology, 50. Surgical facilities include 18 operating rooms where over 15,000 surgical procedures are performed annually. Four obstetrical delivery rooms are maintained. Special diagnostic and treatment units are also available such as the recovery room, cardiac catheterization laboratory, and hyperbaric oxygenation chamber.

The outpatient services comprise the public clinics, the private patient clinics, the employee health office, and the emergency service. Over 250,000 visits are made each year to these units. Close working relationships between Duke Hospital and various outside health agencies enhance continued care of the patients.

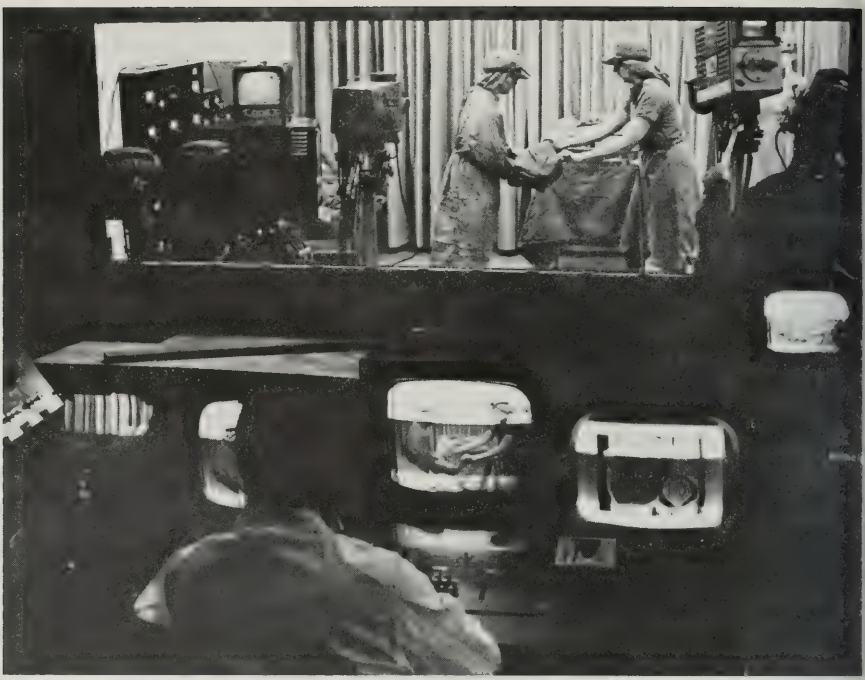
The clinical faculty of the Duke University School of Medicine forms the medical staff of Duke Hospital. Thus this group not only participates in both undergraduate and graduate medical education but also in active medical practice within the hospital and the private diagnostic clinics. Duke Hospital is approved for internship and residency training by the Council on Medical Education and Hospitals of the American Medical Association and conducts an active educational program involving approximately 340 housestaff members. The hospital is fully accredited by the Joint Commission on Accreditation of Hospitals.

Veterans Hospital

The Durham Veterans Administration Hospital is located within walking distance of the School of Medicine. The full-time professional staff are all members of the faculty of Duke University School of Medicine. This 489 bed general hospital provides an opportunity for closely integrated student teaching and housestaff training.

Teaching and Research Facilities

Classroom and laboratories for clinical teaching are located throughout the Duke Hospital patient areas. The major preclinical teaching facilities are in the Davison Building and in the new Basic Science I Building. Additional teaching and research facilities are located in the Diagnostic and Treatment Building, the Gerontology Building, the Clinical Research Building, and the William B. Bell Research Building. All except the latter are a part of a single building complex.



Audiovisual Education

The Division of Audiovisual Education is structured to serve the Medical Center in three ways: 1) to produce all types of audiovisual materials; 2) to inform the faculty and students concerning audiovisual materials and methods; and 3) to provide indirect and direct assistance to the faculty who wish to use audiovisual media in their teaching, research, and patient care endeavors. There are three subdivisions: the Medical Art Facility, the Medical Photography Facility, and the Central Television Facility.

The Medical Art Facility provides illustrations produced by various art methods and techniques of subjects seen or unseen and theoretical. Services rendered include: medical illustrations, schematic and mechanical drawings, diagrams, charts, graphs, designs, lettering, signs, casts, models and exhibits, and other forms of illustrations. The production of facial prostheses and instruction in the use of opaque cosmetics are performed by the Facial Prosthetics Laboratory, a subsection of Medical Art.

The Medical Photography Facility is staffed and equipped to provide all photographs needed for teaching, in research, and in the diagnosis

and treatment of patients. For example, photographs of patients may include such fine details as the patterns of vessels on the retinae, or those of the skin as they are revealed by infrared light. Photographs are used by the medical staff as records of the patients' responses to treatment, as well as in teaching. Surgical and other procedures are recorded in motion pictures to be used for instruction and to enhance the patient record.

The Central Television Facility provides service directed toward the instruction, research, and patient care programs of the Medical Center. The television system is designed to enhance the multimedia approach for instruction. During the past several years, a collection of videotaped material has been produced as cores for teaching presentations. The television control center is capable of interdigitation of all audio and video signals originating from TV cameras, a motion picture-opaque-slide pick-up device, and video tape recorders. Studio and mobile cameras, monitors, and the wide-screen TV projector may be used in twenty-five specific locations throughout the Medical Center. These locations include all major classrooms and student laboratories.

Although no formalized study in medical art, medical photography, and medical television is provided, individual training programs are available for those who wish to pursue a career in the medical audio-visual field. *Director S. Agnello, E. Clark, W. Williams*



Student Life

Living Accommodations

*Housing**

Men enrolled in the School of Medicine may apply for room accommodations in the Graduate Center, which is located within a block of the Medical Center. The rooms are furnished for two persons.

Women enrolled in the School of Medicine may apply for accommodations in the women's section of the Graduate Center or space in Town House Apartments located on Swift Avenue near West Campus. Rooms in the Graduate Center are furnished for two persons. Each air conditioned apartment in Town House is furnished for three persons and includes a double bedroom, single bedroom, living room, completely equipped kitchen, and one and one-half baths. Heat, electricity, and water are included in the rental consideration.

Married medical students may apply for accommodations in the Duke University Apartments. These consist of efficiency, one- and two-bedroom apartments which are available to married graduate students. The apartments are complete with basic furnishings. (See section on Housing in chapter "Financial Information" for further information.)

*Information pertaining to residence halls and Duke University Apartments is subject to change prior to September, 1968.

Duke University Apartment Regulations

The Duke University Apartments are rented on a lease basis for specific periods. Policies for assignment, details of facilities provided, and other pertinent information concerning the apartments will be sent to each applicant who indicates a desire for an apartment.

Dining Facilities

Several dining facilities, located near the Medical Center, are available to students in the School of Medicine.

In the Duke University Union Building, there are two cafeterias offering multiple-choice menus and a dining area, the Oak Room, which offers full meals and *á la carte* items.

In the Men's Graduate Center, there is another cafeteria with multiple-choice menus and the Coffee Lounge, where sodas and sandwiches are served from 11:30 A.M. to 11:00 P.M. (See section on Dining Facilities in chapter "Financial Information" for approximate food costs.)

Services Available

Student Advisory Program

The development of an informal and cordial student-faculty relationship is an important objective of the Duke University School of Medicine. As a means of achieving this objective, the Student Advisory Program was established.

The Student Advisory Program provides each medical student, from the time he enters as a freshman until the time he graduates as a physician, with a single faculty member whose special interest he becomes. Each student joins with four others in constituting a group for which their "personal" faculty adviser has responsibility.

Through informal meetings, discussions, and occasional social gatherings, an atmosphere of mutual confidence and friendliness becomes established, a relationship that often extends beyond graduation and reaches far into the future.

Student Medical Care

With the exceptions to be noted, full medical and surgical care is furnished to all regularly matriculated medical students of the University while they are on the University campus if they have paid the quarterly general fee. This service is under the direction of the physician-

in-charge with the cooperation of the staff of the Duke University Medical Center. It includes hospitalization (limited to thirty days), medical and surgical care, drugs, dressings, x-ray studies, and ward but not special nursing. A charge for board is made at the same rate as in the University dining halls. Refraction of eyes and treatment of teeth and of all chronic and pre-existing conditions, such as diseased tonsils, hernia, elective surgery, chronic skin conditions, and endocrine disturbances, or accidents or illnesses occurring during vacations or while off the campus are not included in this service. The cost of any necessary braces and orthopaedic appliances, as well as of special nursing, must be borne by the patient. If the student has insurance providing hospitalization, surgical, or medical benefits, the benefits shall be applied to the cost of his medical care.

In recognition of the unique health needs of medical students, whose activities bring them into far greater contact with communicable disease than the average university student, a special health program for medical students has been established. The program will provide for a careful physical examination, chest x-ray, blood and urine examination, and necessary immunizations at the beginning of the freshman year. In addition, chest x-rays will be repeated at appropriate intervals during the entire four years of medical school.

Since these services are in addition to those available through the Student Health Service, a special fee of $25.00 will be required of each medical student to cover the extra cost over the four-year period. *R. Portwood, Director of Student Health*

Student and Professional Organizations

Student Government Association

The Student Government Association is composed of all students working toward the degree of Doctor of Medicine awarded by Duke University. An Executive Committee comprising fifteen members is elected by the student body. The responsibilities of the SGA include orientation of the freshmen, continuation of the Big Brother Program for freshmen, publication of the yearbook for the Medical School, participation in the Davison Scholar Program, and organization of social events, as well as representation of student views and opinions on various subjects to the faculty and administration.

A major responsibility of the SGA is the preservation of the Honor Code which has been a proud tradition at Duke University School of Medicine for many years. The prevailing opinion has been that if a student cannot withstand the relatively minor stresses and temptations arising during his

medical education, he could never be expected to act with integrity under the much greater demands and responsibilities of the practice of medicine. Thus, a strong honor system exists to develop and maintain honest habits. Each student on or before entering Duke University School of Medicine is required to sign a statement expressing his understanding and familiarity with the honor system and his willingness to abide by its provisions. The Student Government Association serves as an Honor Council to try any infringements of the Honor Code. The Dean's committee of students, faculty, and administration serves to recommend the disposition of a student found guilty by the Honor Council.

Alpha Omega Alpha

Membership in Alpha Omega Alpha is the highest scholastic honor that a medical student can achieve. Its roster of membership consists chiefly of those who, during their period of fundamental training, have attained the highest grade of scholarship in their respective classes and whose character and professional promise at the time of graduation make their teachers and fellow students confident of their future careers in the field of medicine.

The Christian Medical Society

The Christian Medical Society is an organization of students, interns, residents, and faculty members who recognize the importance of the spiritual as well as the physical aspect of the patient and have banded together in bi-monthly meetings to emphasize the importance of combining these elements for the excellence of medical practice. The moral and spiritual responsibilities of the physician are challenged by small devotional groups and the variety of outside visiting speakers of the organization. Emphasis is placed on high scholarly standards as well as personal spiritual life. Such topics as "The Implication of the New Sex Morality," "Medical Case Studies Requiring Ethical Decisions," "The Doctor as a Counselor," and "Christian Implications of Recent Trends in American Medicine" maintain a highly sensitive spirtual physician and defend against mediocrity in medicine.

Duke SAMA Chapter

Representing 75 per cent of the medical student body, the Duke Chapter of the Student American Medical Association is a service organization interested in a wide spectrum of activities. The Student American Medical Association is a national organization which represents the opinions and desires of the future physicians of America.

The organization has earned a reputation for its interest in medical recruitment in conjunction with the Admissions Committee, a summer

externship program, a directory of the medical center, a listing of research opportunities for medical students, and many other service projects. The Duke Chapter has been very active in the national organization.

The Engel Society

The Engel Society is an organization composed of a small group of medical students and faculty which has as its principal objective the promotion of the exchange of ideas and experiences between students and faculty. The Society is named for the late Dr. Frank L. Engel, who devoted much of his professional life to teaching and to helping medical students at Duke find their own niche in professional life. Six dinner meetings are held each academic year. These meetings provide a forum for informal discussion and an opportunity for the members to hear papers presented on topics of general interest to those in the medical profession. The student membership consists of six members of the junior and six members of the senior medical classes. Each year six members of the rising junior class are invited to replace the six graduating seniors. Students are chosen for membership who possess not only the capability but the desire for scholarship in medicine in its broadest sense.

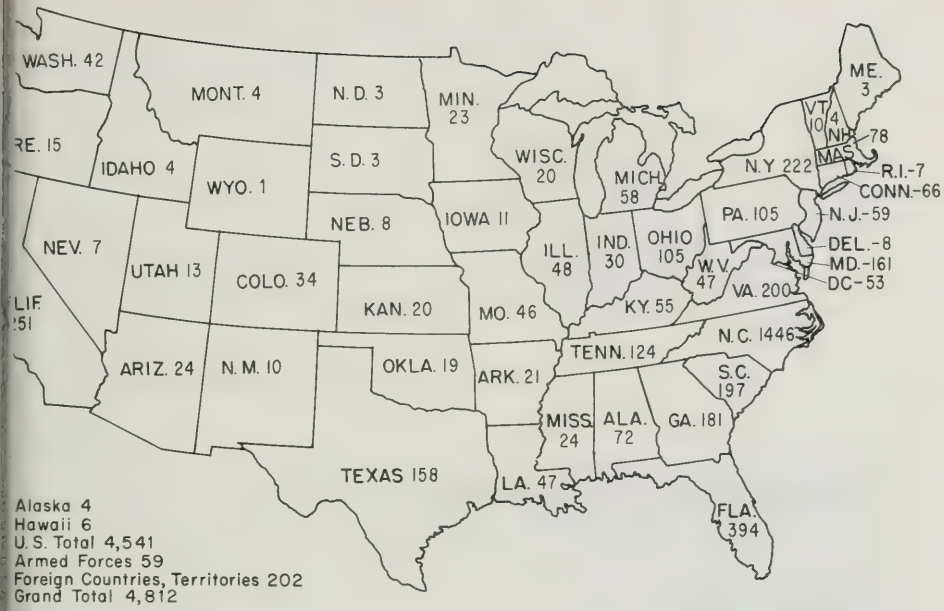
Duke University Medical Alumni

The Duke Medical Alumni now number over 4,800. Membership includes all graduates of the Medical School, past and present faculty, and all past and present house-officers of Duke Hospital (including those who are not Duke graduates). Associate membership is held by alumni of the following: Hospital Administration, Dietetics, Social Service, Laboratory Technique, X-Ray Technology, Physical and Occupational Therapy, Medical Record Library, and Medical Art and Illustration.

Officers

Dr. John A. Yarborough '44, *President* (Maryville, Tennessee)
Dr. John P. McGovern '45, *Vice President* (Houston, Texas)
Dr. Jay M. Arena '32, *Secretary* (Duke Medical Center)
Dr. George J. Baylin '37, *Treasurer* (Duke Medical Center)

A newsletter is sent to all the members in January, April, July, and October of each year. Reunions are held every year in Durham; the next is planned for 1968. Alumni groups have been formed in several states. Alumni luncheons or dinners are held during the following meetings: The American Medical Association, The Southern Medical Association, The



North Carolina Medical Society, and the American Academy of Pediatrics.

The map shows states in which Duke Medical Alumni are located and the number in each state. Figures include those who received the M.D. degree from Duke and also those who have served a year or more on the housestaff. A total of 4,551 physicians are distributed throughout the United States.

There are also 202 Duke Medical Alumni serving in the territories of the United States and in foreign countries, and 59 alumni are on duty in the Armed Forces.

Financial Information

Fees and Expenses

Tuition and Fees

The following table represents an estimate of a student's necessary expenses for the normal academic year of the School of Medicine. The total of these figures suggests a basic minimum budget of approximately $3,000. Allowances for recreation, travel, clothing, and other miscellaneous items must be added to this estimate. These, of course, will vary considerably, depending upon the needs and tastes of the individual.

Tuition and fees	$1750.00
Board	500.00-600.00
Room*	325.00
Books**	90.00-270.00
Medical Student Health Program***	25.00
Instruments and insurance****	160.00
Student Government Subscription*****	10.00

*In the Graduate Center.

**Anticipated annual cost of books: first year, $270; second year, $135; third and fourth years, $90.

***For details of this program, see page 21.

****Microscope, sphygmomanometer, ophthalmoscope, otoscope, and other equipment which are required of each student and which must conform to rigid standards may be purchased from the University by means of a Student Equipment Time Payment Plan.

*****Mandatory fee.

A pro-rata part of the total fees is payable by the Friday preceding each applicable term. A fine of $5.00 is charged for late registration after this time. No credit will be given for any term in which the tuition has not been paid, whether the work has been done here or elsewhere.

A student is not eligible to attend classes or to make use of University facilities if he is in default of payment of monies owed to the University.

Bills for fees and tuition are rendered by the Office of the Bursar, Duke University. However, nonreceipt of a bill does not exonerate the student from payment or from assessment of fine for late registration.

It is not advisable for students to attempt outside work to defray their expenses during the academic year.*

Living Accommodations

Housing†

Men or women enrolled in the School of Medicine may apply for room accommodations in the Graduate Center, which is located within a block of the Medical Center. The rooms are furnished for two persons. The rental charge per person for a double room is $325.00 for the academic year, or $162.50 for the eighteen week term, or $81.25 for the nine week term, or $65.00 for the seven week term.

Male applicants may apply for single rooms, and these will be assigned if available; however, single rooms are usually reserved by present occupants returning for succeeding academic years. No single rooms are available for initial assignment to women applicants.

Women enrolled in the School of Medicine may apply for assignment to Town House Apartments, where three women students are assigned to each apartment. No effort is made by the Director of Housing Management to assign specific bed space within each apartment. The Housing Office strives to assign three students with similar backgrounds and mutual academic interests to each apartment. Mutual requests to share an apartment will be honored. The rental charge for a medical student is $495.00 per academic year. Assignment to apartments for shorter periods may be arranged with the Office of Housing Management.

Married medical students may apply for accommodations in the Duke University Apartments. These consist of efficiency and one- and two-bedroom apartments which are available to married graduate students. The two-bedroom apartments are assigned on a priority basis to couples with two children. The apartments are complete with basic furnishings. Heat, electricity (except for window fans and air conditioners), hot and cold

*Wives of medical students desiring employment may secure information from the Duke Medical Center Personnel Office or the Duke University Personnel Office.

†Information pertaining to residence halls and Duke University Apartments is subject to change prior to September, 1968.

water, garbage and trash collection, and maintenance of grounds are included in the rental charge. Rental charges per month are $70.00 for the efficiency apartments, $90.00 for the one-bedroom, and $110.00 for the two-bedroom. For further information on the Duke University Apartments, write to the Office of Housing Management, Duke Station, Durham, North Carolina 27706.

Applications

Students officially accepted for admission to the School of Medicine will be requested to complete a housing information form to be returned to the Director of Admissions, Duke University School of Medicine, Durham, North Carolina.

On receipt of the completed forms, students will be sent appropriate literature, housing application forms, and detailed instructions. The completed housing application forms and required $25.00 deposits must then be sent to the Director of Housing, Duke University, Durham, North Carolina.

Confirmation of room and apartment assignments will be forwarded to the applicants as soon as practical, usually about one month before occupancy. (See section on Housing Deposit and Refund on page 29.)

Residence Hall and Town House Apartment Regulations

Rooms and apartments are rented for the academic year. Room and apartment rentals for less than one term require special arrangements.

A resident student in order to retain his room or apartment for the succeeding academic year must make application at the Office of the Housing Bureau for confirmation of his reservation.

No refund of room or apartment rent for a specified medical term will be made after the day of registration for that term except for students who involuntarily withdraw to enter the armed services. Such refunds will be made in accordance with the University's established schedule. Students desiring to cancel a residence hall reservation must provide written notice to the Office of Housing Management by August 1 for cancellation of a reservation for the fall semester and not later than ten days prior to the beginning of any subsequent medical term for a cancellation of a reservation for the next medical term. Such notice is essential to obtain refund of both room rent and the $25.00 room deposit. Refer to Medical School Calendar for details on dates of specified terms for each class.

The authorities of the University do not assume responsibility for persons selected as roommates, and each student is urged to select his roommate when reserving a room or apartment. Any student who occupies a double room without a roommate will be given written notice from the Housing Office to obtain a roommate or he may be required to pay

the rental consideration for the whole room or apartment. Similar notification will be sent to occupants of apartments where vacancies occur.

Regulations governing the occupancy of rooms or apartments will be supplied by the Office of Housing Management to those students who make application for housing. Occupants are expected to abide by these regulations.

Any exchange of rooms or apartments must be made at the Office of Housing Management. Persons who exchange rooms or apartments without the approval of the Office of Housing Management will be subject to the charge for both apartment spaces.

Housing Deposit and Refund. A $25.00 deposit is required of each applicant before a housing reservation is made. This initial deposit serves as a continuing deposit for successive terms.

Refunds. The room deposit will be refunded under the following conditions:

1. Within thirty days after the student has been graduated.
2. Upon withdrawal from the University residence halls by students enrolled on the semester basis, provided written notice is received by the Office of Housing Management by August 1, for cancellation of a reservation for the fall semester, and not later than January 15, for the spring semester.
3. Upon withdrawal from the University residence halls by students enrolled on the basis of the medical term, provided written notice is received by the Office of Housing Management by August 1, for cancellation of a reservation for the term beginning in September, and not later than ten (10) days prior to the beginning of any subsequent medical term within the academic year.

The deposit required for Duke University Apartments is refunded under similar circumstances; however, apartments are rented on a lease basis.

No refund will be made until the occupant has checked out of his room or apartment through the Office of Housing Management and has settled his account with the Bursar.

Dining Facilities

If a student dines on the Duke University campuses, the cost of food for the academic year ranges from $500.00 to $600.00, depending upon the individual.

The prices of food are the same in each of the University-operated dining facilities.

Motor Vehicle Registration

Each motor vehicle operated on the Duke University campuses by students enrolled in the School of Medicine must be registered at 08 Social Science Building within five calendar days after operation on the campuses begins, and thereafter must display the proper registration emblem.

Resident students must pay an annual parking fee of $30.00 for each motor vehicle or $10.00 for each motorcycle, motorbike, or motor scooter.

To register a vehicle, the student must present the following documents: (1) State vehicle registration certificate; (2) valid driver's license; and (3) satisfactory evidence of automobile liability insurance as required by North Carolina law—$10,000 per person, $20,000 per accident for personal injuries, and $5,000 property damage.

Parking, traffic, and safety regulations will be given each student who registers his vehicle. Students are expected to abide by these regulations.

Financial Aid

With the increasing cost of medical education, the need has also increased for financial assistance to deserving students. Three kinds of aid are currently available: scholarships or fellowships, loans, and cash awards. Where not stated, information concerning these may be secured from the Office of the Associate Dean.

Scholarships—Fellowships

The Mary Duke Biddle Foundation Scholarships are awarded to academically distinguished medical students to assist them while they are in financial need. A scholarship may cover as much as the cost of tuition at Duke University School of Medicine during the period of an award.

The Thomas C. Bost Foundation Scholarships are available each year in amounts equal to the tuition charge. These awards are assigned on the basis of merit and need.

The Sue Eggleston Woodward Memorial Fund Scholarships are assigned to women students on the basis of merit and need. One award is currently available each year in the amount of $500.

The Charles Alva Strickland Memorial Fund Scholarships may cover up to full tuition costs. This scholarship may be renewed for each year after the first year. Merit and need are taken into consideration.

The Dr. Hillory M. Wilder Scholarship Fund covers full tuition for each of four years and is awarded on the basis of merit and need.

The Pfizer Scholarship offered by Pfizer Laboratories, a division of Charles Pfizer & Co., Inc., is an award of $1,000 granted to a student selected on the basis of merit and need.

The Wilburt C. Davison Scholarship was instituted to enable a medical student to widen his experience by clinical study outside of the United States. One award of $500.00 is made each year. Information may be obtained from the Associate Dean for Undergraduate Medical Education.

The Avalon Foundation Scholarships are non-refundable grants assigned on the basis of financial need and scholastic attainment.

The Francis and Elizabeth Swett Scholarships are awarded to entering students on the basis of outstanding need and merit. The scholarships are awarded on a one-year basis, renewable if funds permit or if need still exists and academic excellence is maintained.

Student Research Fellowships are available as part of an extensive program designed to encourage the medical student to participate in research. Summer Fellowships carry a stipend of $200.00 per month. These Fellowships enable selected students, after completion of their first year, to participate in research during a summer vacation or other free time. Special Fellowships in Nutrition, Ophthalmology, Allergy, and other fields are also available. Opportunities also exist for a student to engage in research for an entire year during which time he temporarily discontinues his medical course. These Post-Sophomore Research Fellowships carry a stipend of $3,200 per year plus an allowance for dependents and tuition expenses. In special circumstances these Fellowships are tenable at institutions other than Duke Medical Center and outside the United States. Information may be obtained from the Associate Dean for Undergraduate Medical Education.

Awards

The Borden Undergraduate Research Award in Medicine. This is an award of $500.00 to be given to the Duke senior who, on the recommendation of the Award Committee, has performed the best research work during his or her entire medical course, including that done during the preclinical years. Applicants should submit their papers, articles, or reprints to the Associate Dean at least three months prior to expected date of graduation.

The Trent Prize in the History of Medicine. The Trent Prize was established by Mrs. Mary Trent Semans in memory of the late Dr. Josiah C. Trent to encourage students to undertake independent work in the history of medicine and to utilize the resources of the Trent Collection.

An annual award of $100.00 is offered for the best essay by a Duke medical student on any topic in the history of medical and allied sciences. An additional book award will be made to each entry of merit.

Students are invited to discuss possible topics with the Curators of the Trent Collection. Finished papers must be submitted to Mr. G. S. T. Cavanagh, Medical Center Library, by October 31 of each year.

Lange Medical Publications Awards. Textbooks and certificates are awarded to the Senior Class Valedictorian and the top ranking woman graduate. Textbooks are also awarded to the top two students in each of the upper three classes and to the president and representatives of the first year class.

C. V. Mosby Awards. Gift certificates for the purchase of books are awarded annually to five top students in the graduating class.

American Medical Women's Association Awards. An award of $100.00 and a citation are presented to the woman medical student who graduates at the top of her class. An Honorable Mention citation is presented to all women students who graduate within the top ten per cent of their class.

Smith Kline & French Award for Medical Writing. An award of $100.00 is made annually to the medical student who submits the most meritorious essay describing a piece of research. The paper must show that particular attention has been given to clarity of writing, definition of objectives, presentation of results, and bibliography in correct form. Papers must be submitted to the Associate Dean for Undergraduate Medical Education before November 30 of each year.

Merck Manual Awards. A copy of the *Merck Manual* is presented annually to past presidents of the Student Government Association and the Duke Chapter of the Student American Medical Association to recognize their contribution to the life of medical students at Duke University School of Medicine.

Roche Award. A gold engraved wrist watch and certificate is presented annually to the graduating senior who has achieved the highest academic performance throughout four years of medical school at Duke University School of Medicine.

Roche Medical Book Program. Each member of the senior class is sent a certificate that permits him to receive a medical textbook of his selection.

Duke University School of Medicine Awards. The past presidents of the Student Government Association and the Duke Chapter of the Student American Medical Association receive a book award in recognition of their contributions to student life.

The "Thomas Jefferson" Award. This award is made periodically to recognize outstanding achievement in fields outside those of medicine and science. The purpose is to identify individuals who have a broad range of talents and who have contributed materially to the life of the University as a whole.

The Upjohn Award in Community Medicine. This is an award of $200.00 given to a Duke student for the best essay discussing some aspect of the social, cultural, economic, and other parameters of health. The

paper should incorporate personal experiences. There is no limitation on length. Applicants should submit their papers by November 30 of each year to Dr. William DeMaria or Dr. E. Croft Long.

Loans

Loan funds are administered in accordance with the following regulations:

1. Loans will be made only to students who are taking full courses of study that lead to a degree. All loans except those from the Swett Funds must be arranged not later than July 1 of each year.
2. Every applicant for a loan must present with the application such security as the President of the University may approve, and no money will be advanced before a note with approved security is in the hands of the Treasurer of the University.

The Angier B. Duke Memorial Fund covers amounts up to full tuition for each of four years.

The W. K. Kellogg Foundation Funds are available for amounts up to full tuition for each of four years.

The Francis and Elizabeth Swett Funds are immediately available to students with emergency need. These loans are usually small and on a short-term basis.

The James L. Clark Memorial Fund provides financial aid to needy students who are outstanding in merit and dedication.

North Carolina State Loans are available to worthy students who agree, upon completion of the required training, to practice in North Carolina in certain designated areas a full calendar year for each academic year or fraction thereof that a loan is received. To be eligible a student must have been a resident of North Carolina at least six months immediately preceding initial matriculation in a course of study. The maximum loan to a medical student is $2,000.00 per academic year ($8,000.00 for a four year period). The student who receives a loan may, following completion of the four year medical course, complete up to three years of postgraduate training prior to commencing the practice commitment. A recipient is also eligible for deferment while on active duty in the armed services during the mandatory draft period. If the recipient is unable to practice as specified upon completion of professional training, he agrees to repay the loan on demand at 6% interest. Detailed information can be obtained from the North Carolina Medical Care Commission, Post Office Box 9594, Raleigh, North Carolina 27603.

Health Professions Student Loan Fund was created by federal legislation and funds have been allotted to Duke University School of Medicine. Long term loans are made at favorable interest rates.

Admission

Intelligence, character, and integrity are the essential qualifications for admission.

A premedical student should be aware of the importance of a well-rounded general education as a preparation for the study of medicine and not limit himself to scientific courses. The Admissions Committee believes that the manner in which the college years are utilized is of greater importance than the specific subjects taken. The premedical student would be better advised to secure a knowledge of the principles and a thorough appreciation of the interrelations of the basic sciences than to accumulate credits in many courses. He should learn how to work independently, to observe critically, and to analyze rather than merely to store the information presented. Good study habits and use of time are perhaps the most important tools a student can bring to the study of medicine. His choice of studies beyond those required for admission should be governed by his own chief interests and by the intellectual stimulus to be derived from the work.

Application for Admission

Application forms may be obtained by writing to the Committee on Admissions, Box 3710, Duke Hospital, Durham, N. C. Please do not send a request before August 1. Formal applications will be accepted by the Committee on Admissions only between August 1 and December 1.

Due to the large number of qualified applicants to all medical schools, each student is urged to apply to at least four schools.

Requirements for Admission

A minimum of ninety semester hours of approved college credit is necessary for admission to the School of Medicine. These must include:

One year of college English which must consist primarily of expository English composition.
Two years of chemistry. The first year should be inorganic and the second, analytic and organic.
One year of physics.
One year of biology and/or zoology.
One year of calculus.

All science requirements must be completed not more than seven years prior to entrance.

Medical College Admission Test is required of all applicants. It is administered by the Psychological Corporation, 304 E. 45th St., New York 17, New York. This test is given at many of the colleges throughout the country in May and October of each year. Arrangements for taking this test should be made by the student through his premedical advisor.

Selection

Selection is made between September 15 and February 15 for the student entering the following September. The data on each candidate are carefully screened by the Committee on Admissions. A personal interview will be arranged for those with satisfactory credentials. If the distance from Durham is permissible the interview is conducted here; otherwise candidates are referred to our Regional Representatives. Many factors are evaluated by the Committee in the selection process. Those students who show the most promise for exceptional performance in their future practice of medicine are admitted. The candidate is notified as soon as possible whether or not he has been accepted. If he has been accepted, it is necessary for him to send a deposit of $50 by the succeeding January 15 in order to insure enrollment. This deposit is applied toward tuition and is refundable upon withdrawal prior to January 15. Inasmuch as admission must be offered a considerable period in advance of matriculation, the admission must be provisional upon the successful completion of the remaining college work. In addition, a physical examination is necessary prior to enrollment.

Advanced Standing

Applicants who have completed two years in most of the United States and Canadian schools will be considered for transfer only as space permits. Such transfer students would be required to complete the second and fourth year of our curriculum. For transfer, successful completion of Part I of the National Board Examination is required as evidence of satisfactory accomplishment in the subjects taught in the first two years of most North American schools.

A limited number of transfer students from foreign medical schools may be admitted each year. Such students should have completed their preclinical training and will be required to take Part I of the National Board Examination. If space permits, these students will be admitted to our sophomore clinical rotation and be required to complete the junior and senior years composed of electives in the clinical and preclinical areas. By attending two summer sessions a transfer student from a foreign medical school can earn his M.D. degree from Duke University approximately two and one half years after matriculation.

Students who have successfully completed the Ph.D. in the biomedical or preclinical sciences may apply for a three year program leading to the M.D. degree, consisting of the freshman "core" year followed by the sophomore clinical rotation and the senior clinical electives. Advanced standing for the courses given during the freshman year must be negotiated with the individual department chairman following acceptance.

Transcripts

A student who wishes to transfer his credits to another institution should direct his request to the Recorder, Duke University School of Medicine. Transcripts are furnished without charge.

Summary for Applicants

Years of College work required	Three
Tuition and fees for first year	$1775.00*
Estimated cost of equipment first year	265.00
Estimated room and board	925.00
Nonrefundable application fee	10.00
Deposit required on or before January 15, 1969, from accepted applicant	50.00
Medical College Admission Test required	Yes
Size of 1968-69 first year class	85

*Includes $25 special medical student health fee.

File application for admission between	August 1, 1968 December 1, 1968
Notification of action on application between	October 1, 1968 February 15, 1969
Date entering class starts school	September 3, 1969

Regional Representatives of the Committee on Admissions

Alabama: *Birmingham*, Sam E. Upchurch
Alaska: *Anchorage*, Milo H. Fritz
Arizona: *Phoenix*, Stanley Karansky
Arkansas: *Little Rock*, Rosalind Smith Abernathy
California: *Berkeley*, H. I. Harvey; *Los Angeles*, Joseph A. Conroy, Jeremiah W. Kerner; *Menlo Park*, Gustave Freeman; *Palo Alto*, James B. Golden; *Pasadena*, Robert H. Pudenz; *San Francisco*, John E. Cann; *San Mateo*, Lester H. Margolis
Canada: *Montreal*, J. E. Gibbons; *Toronto*, John B. Armstrong
Colorado: *Colorado Springs*, Donald D. Borders; *Denver*, F. Vernon Altvater, H. T. Horsley, Jr., Ray Pryor
Connecticut: *Hartford*, William H. Glass; *New Haven*, Clarence D. Davis, Saul A. Frankel, Joseph Mignone, Ned M. Shutkin; *Old Saybrook*, John R. Egan
District of Columbia: Louis Spekter
Florida: *Gainesville*, Lamar Roberts; *Lakeland*, Charles Larsen, Jr.; *Miami*, James J. Hutson; *St. Petersburg*, David S. Hubbell; *Tampa*, Richard G. Connar
Georgia: *Atlanta*, E. B. Dunlap, Jr.
Hawaii: *Honolulu*, James G. Harrison, Jr.
Idaho: *Boise*, William L. Venning; *Idaho Falls*, Reid H. Anderson
Illinois: *Chicago*, George H. Gardner, Daniel J. Pachman, E. Clinton Texter, Jr.; *Evanston*, Donald R. Mundie, Milton Weinberg, Jr.; *Monmouth*, Kenneth E. Ambrose
Indiana: *Indianapolis*, Stuart O. Bondurant, John D. Graham, Joseph C. Ross
Iowa: *Davenport*, A. W. Boone; *Des Moines*, C. W. Latchem; *Iowa City*, Arthur L. Benton
Kansas: *Kansas City*, Ralph H. Major; *Wichita*, Thomas Jager
Kentucky: *Lexington*, Kearns R. Thompson; *Louisville*, George Uhde
Louisiana: *New Orleans*, Richard H. Corales, Jr., Harold M. Horack, Philip H. Jones, Richard M. Paddison
Maine: *Portland*, E. Charles Kunkle
Maryland: *Baltimore*, John T. King, C. Edward Leach

Massachusetts: *Boston*, Raymond D. Adams, James H. Currens, Dorothy A. Elias, Ellison C. Pierce, Jr., James L. Tullis, R. Lewis Wright; *Springfield*, George A. Sotirion

Michigan: *Ann Arbor*, George E. Bacon, E. Richard Harrell, Muriel Meyers; *Detroit*, Robert F. Kandel; *Port Huron*, William T. Davison

Minnesota: *Rochester*, W. Henry Hollinshead

Missouri: *Columbia*, John T. Logue; *Kansas City*, Robert H. Barnes

New Hampshire: *Hanover*, George Margolis, Robert J. Vanderlinde

New Jersey: *Montclair*, Benjamin B. Burrill

New Mexico: *Albuquerque*, Robert Proper; *Artesia*, C. Pardue Bunch

New York: *Albany*, Frank M. Woolsey; *Buffalo*, Olive J. Bateman; *Endicott*, James K. Tompkins; *Ithaca*, John G. Maines, Jr.; *Lockport*, Frank H. Crosby; *New York City*, Eugene L. Horger, Julia M. Jones, Michael J. Lepore, J. William Littler, Richard A. Ruskin, Robert A. Shimm; *Pittsford*, Rufus S. Bynum; *Syracuse*, Alfred S. Berne, James E. Sheehy

Ohio: *Cincinnati*, Murray B. Sheldon, Jr.; *Columbus*, Robert J. Atwell, Charles A. Doan, James V. Warren; *Dayton*, Stuart R. Ducker; *Elyria*, William L. Hassler; *Toledo*, William A. Phillips

Oklahoma: *Tulsa*, Gerald E. Cronk

Oregon: *Portland*, Richard R. Carter

Pennsylvania: *Bethlehem*, Ralph K. Shields, James G. Whildin; *Harrisburg*, Alfred J. Sherman; *Johnstown*, W. Frederick Mayer; *Philadelphia*, John V. Blady, Max W. Fischbach, Alfred M. Sellers; *Pittsburgh*, Jack D. Myers; *Scranton*, Louis C. Walker; *Williamsport*, William R. Brink

Puerto Rico: *Santurce*, Kenneth B. Brown

South Carolina: *Charleston*, Edward F. Parker, J. I. Waring; *Columbia*, Ben N. Miller; *Greenville*, Raymond C. Ramage

Tennessee: *Chattanooga*, Richard Van Fletcher; *Memphis*, Raphael E. Semmes; *Nashville*, A. Greer Ricketson; *Sewanee*, Henry T. Kirby-Smith

Texas: *Austin*, Frank Morris; *Dallas*, R. H. Adams, A. James Gill; *Galveston*, Henry L. Burks, R. H. Rigdon; *Houston*, H. Grant Taylor; *Midland*, Dorothy B. Wyvell; *San Antonio*, Royall M. Calder

Utah: *Salt Lake City*, Andrew Deiss

Vermont: *Burlington*, Rufus C. Morrow

Virginia: *Charlottesville*, Henry B. Mulholland

Washington: *Seattle*, W. A. MacColl

West Virginia: *Charleston*, Harold H. Kuhn

Wisconsin: *La Crosse*, C. Norman Shealy; *Milwaukee*, Jack L. Teasley

Courses of Instruction

Note: For a complete description of each course, consult the *Bulletin of the School of Medicine and Medical Center.*

Anatomy

Professor J. D. Robertson, *Chairman*; Professors J. Buettner-Janusch, J. Everett, J. Markee, M. Moses, T. Peele; Associate Professors R. Becker, W. Cuyler, K. Duke; Assistant Professors C. Christian, M. Mahaley, J. H. Prost; Associates F. Bassett, S. Counce-Nicklas

Required Course

The core course of instruction in *Human Anatomy* (ANA-200) will constitute about 253 hours during the first 18 weeks of the first year. The gross anatomy of the head, neck, and trunk will be studied during the first 11 weeks, histology during the first 13 weeks, and neuroanatomy during the 15th through 18th week. The gross anatomy of the back, pectoral and pelvic girdles, and the limbs will be studied during the 12th through 14th week. All of the above will be integrated with the other material studied during the first year. Emphasis will be placed upon the study of the material in the laboratory. In an attempt to utilize more fully the laboratory time, audiovisual education methods will be employed as fully as

possible. These techniques will consist of color motion pictures of demonstration dissections, closed-circuit television, color lantern slides, and motion pictures. All of the instruction is designed to be as informal and as nearly individual as possible. General principles and the functional viewpoint of living anatomy will be stressed in the hope that the student may be stimulated to secure a working knowledge of anatomy in the broadest sense. Whenever possible, fresh tissues and living cells will be made available for examination. Patients exemplifying anatomical principles will be presented, some within the classroom, others over live television, and others prerecorded on videotape for later presentation at the appropriate time in the students' learning experience.

In gross anatomy all of the students will dissect the important structures in certain areas of the body; namely, within the neck, thorax, abdomen, and pelvis. In other regions the students will do little or no dissection but will instead view prosections as well as prerecorded TV programs and motion pictures. The regions that will be presented in this manner include the back, the pectoral and pelvic girdles, the limbs, and the interior of the cranium, including the gross anatomy of the ear, orbit, oral and nasal passages, and paranasal sinuses. The general principles of programmed learning will be utilized even more extensively than in the past few years.

In microscopic anatomy the students will be introduced to electron-microscopy, polarization optical, and X-ray diffraction methods for studying problems of biological structure. The teaching will be focused on the cell, its generalized structural and functional organization to the molecular level, and its differentiation in various organs and tissues. The students will be introduced to biochemical cytology and to biophysical cytology and cytological genetics. The structure of unit membranes will be considered in detail.

In neuroanatomy the students will be introduced to neurocytology, nerve cells, and glia. The major part of the course will deal with: (a) the spinal cord, including the ascending, descending, and associative tracts; (b) the brain, brain stem, and cranial nerves 3 through 12; (c) the autonomic nervous system; (d) the cerebellum, brain stem, and reticular formation; (e) the thalamus and hypothalamus; (f) the cerebral cortex, including its structure and blood supply and primary pathways; and (g) the somatic sensory and the motor systems, as well as the visual, auditory, olfactory, and limbic systems. There will also be clinical neurology with presentations of suitable patients.

The students will spend about 111 hours in gross anatomy, about 78 hours in microscopic anatomy, and about 64 hours in neuroanatomy.

Elective Courses

Anatomy

ANA-206(B). *Anatomy of Back and Extremities.* Weight: 3. Term 3: Jan.-March. Markee and Bassett

ANA-208(B). *Anatomy of the Trunk.* Weight: 2. Term 3: Jan.-March. Markee and Duke

ANA-216(B). *Anatomy of the Head.* Weight: 2. Term 4: April-May. Markee and Everett

ANA-220(B). *Dissection of Restricted Regions.* Weight: 3. Term 4: April-May. Markee and Duke

ANA-230(B). *Neuroanatomy of Somatic Motor and Sensory Systems.* Weight: 2. Term 3: Jan.-March. Peele and McMasters

ANA-231(B). *Physical Anthropology.* Weight: 3. Terms 1 and 2: Sept.-Jan. Buettner-Janusch

ANA-232(B). *Human Genetics.* Weight: 3. Terms 3 and 4: Jan.-May. Buettner-Janusch

ANA-234(B). *Neuroanatomy of the Visceral Nervous System.* Weight: 2. Term 3: Jan.-March. Peele and Morgan

ANA-236(B). *Neuroanatomy of Special Senses.* Weight: 2. Term 4: April-May. Peele and Morgan

ANA-237(B). *Neuroendocrinology.* Weight: 1. Terms 3 and 4: Jan.-May. Everett

ANA-238(B). *Evolutionary Biology and Medical Science.* Weight: 3. Term 4: April-May. Buettner-Janusch and Prost

ANA-240(B). *Advanced Microscopic Anatomy.* Weight: 3. Terms 3 and 4: Jan-May. Robertson, Becker, Buettner-Janusch, Duke, Everett, Armstrong, and Moses

ANA-244(B). *Topics in Cell Structure and Function.* Weight: 3. Terms 3 and 4: Jan.-May. Moses and B. Nicklas

ANA-254(B). *Research Techniques in Anatomy.* Weight: 8-9. Every term. Staff

ANA-256(B). *Surgical Neuroanatomy.* Weight: 1. Terms 2 or 3: Nov.-Jan., April-May. Mahaley

ANA-258(B). *Topics in Developmental Biology.* Weight: 2. Terms 3 and 4: Jan.-May. Counce

ANA-260(B). *Developmental Systemic Anatomy.* Weight: 2. Terms 3 or 4: Jan.-March, April-May. Duke

ANA-262(B). *Neuroanatomy of Dorsal Thalamus and Cerebral Cortex.* Weight: 2. Term 4: April-May. Peele and Morgan

Biochemistry

Professor P. Handler, *Chairman*; Professors M. Bernheim, S. Gross, W.

Guild, R. Hill, H. Kamin, C. Tanford, R. Thiers, S. Wakil; Associate Professors I. Fridovich, J. Harris, N. Kirshner, W. Lynn, K. McCarty; Assistant Professors R. Greene, K. V. Rajagopalan, H. Sage, R. Wheat; Instructor R. Habig; Associates J. Joshi, Y. Nozaki, B. S. Masters, P. Holloway

Technical Associate L. Daniels; *Fellows* L. Arqueros, K. Brew, G. Capp, A. Cosmatos, M. Coughlan, F. D'Anzi, K. Dorrington, S. M. Duttera, R. Ferris, W. Fish, E. J. Fjerdingstad, E. P. Kirby Hade, J. Hijmans, C. Holloway, P. Holloway, V. Joshi, A. Kirshner, B. S. Masters, P. Mattock, M. Miljkovic, M. Mizugaki, G. Powell, T. Sakurada, H. Schulte-Holthausen, B. Sedgwick, M. Shapiro, L. Siegel, D. Straub, J. B. Sullivan III, A. Swindell, T. Takagi, I. Trayer, C. Tritschler, O. Viveros, J. Vorhaben, G. Weeks

Required Course

The required course in *Biochemistry* (BCH-200) for first year students is given over a period of eighteen weeks in the first term. The first phase is devoted to a survey of the chemistry of the materials fundamental to all life, proteins, fats and carbohydrates, and the nature of enzymatic action. This is followed by consideration of those events in intermediary metabolism common to the life of all mammalian cells. The special metabolism of muscle, kidney, bone, erythrocytes, liver, and connective tissue and the chemical aspects of digestion, respiration, electrolyte, acid-base, and fluid balance are presented with relation to the study of the physiology of the organs so as to facilitate integration and correlation of the two disciplines.

The required course in Genetics (BCH-204) for first year students is given over a period of eleven weeks in the second term. The course emphasizes heavily fundamental aspects of gene structure, function, recombination, selection and the organization of the genetic material. The primary objective of the course is to provide the basic information and concepts necessary for an appreciation of the origin and consequences of genetic variability.

Elective Courses

BCH-203(B). *Chemistry of Natural Products.* Weight: 2. Terms 1 and 2: Sept.-Jan. Biochemistry Staff

BCH-212(B). *Biochemistry-Medical Scientists Seminar.* Weight: 1 Terms 3 and 4: Jan.-May. Biochemistry Staff

BCH-250(B). *Biochemistry of Development.* Weight: 1. Terms 3 and 4: Jan.-May. McCarty and Harris

BCH-303(B). *Macromolecules.* Weight: 4. Terms 1 and 2: Sept.-Jan. Tanford and Hill

BCH-308(B). *Metabolism.* Weight: 5. Terms 3 and 4: Jan.-May. Kamin and Biochemistry Staff

BCH-312(B). *Clinical Chemistry Laboratory.* Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, April-May. Habig

BCH-315(B). *Molecular Genetics.* Weight: 3. Terms 1 and 2: Sept.-Jan. Guild and Biochemistry Staff

BCH-347(B). *Special Topics.* Weight: 1. Terms 1 and 2: Sept.-Jan. McCarty and Biochemistry Staff

BCH-348(B). *Special Topics.* Weight: 1. Terms 3 and 4: Jan.-May. McCarty and Biochemistry Staff

BCH-351(B). *Genetics Seminar.* Weight: 1. Terms 1 and 2: Sept.-Jan. Gross and Biochemistry Staff

BCH-352(B). *Genetics Seminar.* Weight: 1. Terms 3 and 4: Jan.-May. Gross and Biochemistry Staff

BCH-354(B). *Biochemistry of Disease.* Weight: 2. Terms 3 and 4: Jan.-May. Biochemistry Staff

BCH-355(B). *Research in Genetics.* Weight: 1-8 per 9 weeks. Terms 1 and 2: Sept.-Jan.

BCH-356(B). *Research in Genetics.* Weight: 1-8 per 9 weeks. Terms 3 and 4 or Summer: Jan.-May, June-Aug.

BCH-357(B). *Research in Biochemistry.* Weight: 1-8 per 9 weeks. Terms 1 and 2: Sept.-Jan.

BCH-358(B). *Research in Biochemistry.* Weight: 1-8 per 9 weeks. Terms 3 and 4 or Summer: Jan.-May, June-Aug.

PHA-252(B). *Pharmacology and Biochemistry of Neural Transmitters.* Weight: 3. Terms 1 and 2: Sept.-Jan. Schanberg and Kirshner

Clinical Cancer Training Program

Professor W. Shingleton, *Chairman*; Associate Professors J. Laszlo, G. Wilbanks, J. Cavanaugh, S. Porter, S. Heyden

The Clinical Cancer Training Program, supported by a grant-in-aid from the USPHS, is designed to improve clinical cancer training for the medical student and for the postdoctoral trainee.

The basic course, Survey of Cancer, Basic and Clinical (CTP-209C), is an interdepartmental survey of basic and clinical cancer. It is offered as an elective to senior medical students and for postdoctoral fellows in the Training Program. Weight: 8. Terms 2 or 4: Nov.-Dec., April-May.

Additional time is spent in those areas in the Medical Center primarily involved with cancer diagnosis and treatment, such as Surgical

Pathology, Radiotherapy, Medical and Pediatric Hematology, and inpatient and outpatient tumor services of the Departments of Surgery and Obstetrics and Gynecology. The student or trainee may choose one or several of these areas in which to work, and individual programs can be developed for each participant according to his specific interests.

The Training Program is supplemented by a tumor registry where accurate follow-up records are available to staff and students. The data collected include results of treatment of large numbers of patients as expressed in percentages of those (1) free of recurrence, (2) apparently cured, (3) having a recurrence, or (4) dead of recurrence at varying times after onset of the disease and the institution of therapy.

The faculty for the Training Program consists of selected members of the Medical School faculty who possess an interest in clinical cancer teaching and who are designated for this type of teaching by their department heads.

Community Health Sciences

Professor E. Estes, Jr., *Chairman*; Professors W. DeMaria, E. Long, D. Smith; Associate Professors S. Heyden, E. Persons, T. Williams; Assistant Professors R. Portwood, M. Bryson, W. O'Fallon; Associates D. Naumann, C. Knight

Required Course

The required course in *Community Health Sciences* (CHS-200) will be given during the second year. Two hour lectures are given by faculty and guests each week. This series serves as an introduction to biostatistics, epidemiology, industrial medicine, community health and family medicine, and transmission and natural history of some diseases.

Elective Courses

CHS-208(B). *Medical Uses of Computers.* Weight: 2. Terms 2 or 4: Nov.-Jan., April-May. H. K. Thompson

CHS-215(B). *Biostatistics in the Medical Sciences.* Weight: 2. Term 3 or Summer: Jan.-March, June-Aug. O'Fallon

CHS-203(C). *International Health Organizations.* Weight: 1. Term 4: March-May. Long and visiting lecturers

CHS-205(C). *International Medicine.* Weight: 1. Term 4: March-May. Long and visiting lecturers

CHS-207(C). *Research in International Health.* Weight: 2. Every term. Long and Staff of Department and of U.N.C. School of Public Health

CHS-210(C). *Student Community Health Program.* Weight: 9. Term: June-Aug., Summer. Long and DeMaria; Faculty of Department of Community Health Sciences, Duke; School of Public Health, U.N.C.; Department of Preventive Medicine, University of San Carlos, Guatemala; Dr. Edwin Wallace, Director, Gray Memorial Hospital, Nicaragua

CHS-217X(C). *Community Health in Georgia.* Weight: 9. Summer Term: June-Aug. Heyden and Hames (general practitioner, director of the Evans County Study)

Endocrinology

Associate Professor H. Lebovitz, *Director*; Associate Professor H. McPherson, *Director, Endocrine Clinic*; Professor R. Bressler; Associate Professor D. Christian; Assistant Professors R. E. Fellows and R. Gibbs; Associate R. Turkington

Fellows J. Feldman, K. Shultz, S. Fortney, L. Nilsen, T. Huff, F. Neelon, B. Goldstein, J. Eggers, D. Halbert, B. Keenan, C. Roe

The Division of Endocrinology was organized by Dr. E. C. Hamblen in 1936 as a division of the Department of Obstetrics and Gynecology. In 1955 it was reorganized as an integrated service with a staff drawn from several clinical and preclinical departments. Its objective is to give comprehensive training in basic and clinical Endocrinology and metabolism, particularly at the postgraduate level. Although individual senior staff members have their own special clinical and research programs, the division is organized so that clinics, conferences, ward rounds, and seminars are participated in as joint ventures by the entire staff. The endocrine laboratory and its services are available to all members of the staff equally. Resident physicians from Medicine, Obstetrics and Gynecology, and Pediatrics rotate through the endocrine division. At any one time there are usually four residents assigned to the division. Clinical and research fellows and trainees are assigned to individual senior staff members, depending on their major interest, but all participate essentially equally in the clinics, teaching rounds, and conferences.

The general Endocrine Clinic meets four mornings and the Metabolism-Diabetes Clinic one morning each week. The Pediatric Endocrine Clinic meets one afternoon a week. All fellows have the opportunity to attend these clinics and in addition the clinical fellows assist in the care of the private patients with endocrine and metabolic disturbances including diabetes. Twice a month the endocrine clinic meets jointly with the neurosurgical tumor follow-up clinic to review patients with pituitary tumors and related brain lesions. Ward rounds on inpatients are held from 4-5 p.m. Monday and Friday and at 9 a.m. on Wednesday each

week. An endocrine conference is conducted weekly. In addition, each of the supporting services (Medicine, Obstetrics and Gynecology, and Pediatrics) has special conferences, lectures, and seminars of endocrine interest which are available to the staff.

Elective Courses

END-203(C). *Research Topics in Endocrinology and Metabolism.* Weight: 8. Every term. Lebovitz, Bressler, Gibbs, Turkington and Endocrinology Staff

END-205(C). *Mechanisms of Hormone Actions.* Weight: 1. Term 1: Sept.-Nov. Lebovitz, Bressler, McPherson, Gibbs, Turkington, and Endocrinology Staff

END-207(C). *Metabolic Response to Disease.* Weight: 1. Term 4: March-May. Lebovitz, Bressler, McPherson, Gibbs, Turkington, and Endocrinology Staff

Medical Research Training Program

Professor W. R. Guild, *Director*; Professors S. Gross, M. Moses; Associate Professors T. McManus, K. McCarty; Assistant Professors O. W. Jones, K. V. Rajagopalan, H. K. Thompson

The Medical Research Training Program (MRT-399B) is an elective available to qualified students in September of their third or fourth calendar year of medical school and to members of the resident staff and post-doctoral fellows with the M.D. degree.

The objective is to give the participant a sound basis for further training directed toward a career in investigative medicine and biology, with opportunity to do individual research for an extended period of time under the direction of a faculty member. Up to sixteen applicants are admitted annually, about half pre- and half post-doctoral, on the basis of interviews by a faculty committee who consider past academic performance and evidence of research bent and curiosity.

The formal part of the program occupies the academic year from September to June. It consists of three months of intensive laboratory, lecture, and seminar sessions centered around molecular and cellular biology, didactic courses in mathematics and biomathematics which extend through the year, and a series of student seminars on current research literature during the period January to May. In December each participant selects a research mentor and, with his guidance, works on a problem for seven to fourteen months. In May he presents a seminar on his research accomplishments to that time.

Special lectures and seminars are given by guests from other institutions and by members of the University. The entire program is housed in a special wing of the W. B. Bell Medical Research Building and is directed by members of the faculty who devote a major part of their effort to this program.

The minimum participation in this program is for the period September to June, of which at least two quarters must be non-credit time, for which a stipend will be paid. The student is urged to plan on a longer period, however, as follows: By taking clinical work in the first and second summers and research in the third, he may put together a block of fourteen to seventeen calendar months (September to the following November or January, i.e.) devoted to basic science and still graduate on time with the normal 50-50 mixture of clinical and basic credits in the elective years of the new curriculum.

To achieve this, credit will be given for continued research time following completion of the formal program in June, with evidence of satisfactory performance to be certified by the student's faculty research director. In the fall of the fourth academic year, the participant may continue research, take courses, or combine the two, as seems best at that time.

Students who already know they wish to go on to a Ph.D. degree are advised to use the time for intensive basic coursework, rather than to take this program. For those who find they wish to do so after some research experience, however, the Graduate School of Duke University will accept the time in this program as part of the residence requirement for a Ph.D. In addition, the student must satisfy course and examination requirements specified by the department of his choice, as well as the language and dissertation requirements of the Graduate School. The combined degree program is an individual matter and requires a minimum of five and one-half to six years.

Those interested in this program are encouraged to discuss it with the Director early in their career, in order to plan how best to use their summers. It is desirable to obtain the maximum summer credits before September of the third year.

Medicine

Professor J. Wyngaarden, *Chairman*; Professors M. Bogdonoff, R. Bressler, J. Callaway, E. Estes, O. Hansen-Pruss, J. Hendrix, A. Heyman, W. Kempner, G. Kerby, W. Lynn, H. McIntosh, E. Menefee, M. Musser, W. Nicholson, E. Orgain, E. Persons, J. Ruffin, R. W. Rundles, H. Sieker, E. Stead, M. Tyor; Associate Professors S. Appel, W. Dobbins, J. Greenfield, K. Kilburn, M. Kinsbourne, J. Kylstra, J. Laszlo, H. Lebovitz, H. Mc-

Pherson, T. Peele, E. Peschel, J. Pfeiffer, R. Robinson, H. Saltzman, D. T. Smith, A. Wallace, R. Whalen; Assistant Professors T. Andreoli, J. Boineau, C. Armstrong, I. Brody, C. Buckley, J. Clapp, W. Floyd, C. Gerber, R. Gibbs, R. Gorten, J. Gunnells, C. Hayes, O. W. Jones, R. Klein, J. Morris, H. Nagaya, S. Osterhout, R. Portwood, W. Rosse, P. Rowe, S. Schanberg, H. Silberman, H. Thompson, J. Tindall, J. West, D. Young, R. Fellows; Associates C. Bennett, M. Dick, J. Ellis, M. Entman, J. Hijmans, Y. Kong, W. Kremer, B. McClees, M. McLeod, B. Newborg, R. Peter, J. Ruskin, R. Turkington; Clinical Associates S. Barefoot, W. Batten, J. Bumgarner, G. Crane, C. Curry, A. Cooper, W. Fitzgerald, P. Gebel, H. Grode, C. Johnson, T. Jones, G. Koury, T. Long, E. Lupton, J. Lusk, D. E. Miller, J. A. Moore, H. Perkins, J. Robbins, W. Singletary, A. D. Smith, C. Styron, D. Welton

Instructors T. Asmundsson, R. Bache, A. Berenato, J. Bush, D. Blenkarn, G. Blumenschein, H. Carpenter, J. W. Cook, F. Dalton, W. Davis, J. Feldman, F. Cobb, M. Freund, A. Ferguson, S. Fortney, J. Garcia, E. Gear, R. Gilgor, B. Goldstein, L. Gregory, J. Gutterman, L. Gutterman, K. Hanson, A. Harley, L. Harris, T. Huff, N. Hunt, A. Huang, T. Low-Beer, R. Karpick, W. Howard, H. Maizel, C. Mansbach, M. Matute, W. McMillan, R. Miller, W. S. Miller, K. Nakahima, F. Neelon, L. Nilsen, L. Pearce, A. Price, E. Rutsky, J. Rygorsky, S. Schaal, K. Shultz, O. Sperling, J. Tomasini, G. Wagner, H. Yeager, H. Zeft, D. Zipes, P. Rowe; *Research Assistants* R. Peschel, C. Schlayer; *Chief Residents* J. Ellis, J. Douglas, C. Gerber, J. Hall; Assistant Residents V. Behar, D. Brewer, C. Burger, G. Butcher, W. Carter, G. Cunningham, H. Delcher, M. Dunaway, W. Elias, J. Gordon, T. Guiney, C. Hopkins, W. Klein, S. Kohler, G. Logue, L. Lohrbauer, J. Males, D. S. Miller, G. D. Miller, W. Morris, W. Obenour, J. Roberts, S. Romeo, M. Rotman, M. Rozear, D. L. Smith, P. Springberg, D. Taylor, J. Taylor, A. Walston, N. Weng, R. Wilkins; *Interns* D. G .Allen, S. Baylin, R. Auburn, H. Austin, N. Bath, T. Bensinger, H. Bonkowsky, H. Gallis, J. Gockerman, R. Goldenberg, E. Harper, F. Hochberg, D. Hollister, M. Horwich, J. Huddleston, M. Kendall, H. Knopf, A. Latty, W. Malzone, K. Matchett, M. Matthews, B. McClees, E. Overfield, R. Panush, R. Rosati, D. A. Smith, C. Srodes, W. Stark, K. Straub, D. Treiman

Required Course

The Department of Medicine traditionally has the responsibility of preparing the student for a lifetime of learning as he gives care to patients who ask him for help. The first step is to begin to think and act like a doctor. A course in the first year—Introduction to Clinical Medicine (MED-201)—prepares the student to take an active role in patient care.

The student assigned to Medicine (MED-205) in the second year or

electing Medicine in the fourth year acts in the role of a physician. His desire to give good care is the motive which drives him to excellence. He learns to identify properly the problems of the patient. Having identified the problems, he marshals the information he can bring to bear on them by his past training; he recognizes the gaps in his knowledge as he attempts to focus the information learned from the basic sciences onto the specific clinical problem. Using the patient as his means of integration, he continues his reading in anatomy, physiology, microbiology, pharmacology, and biochemistry. He reads widely in medical texts. In this clinical setting, he discusses the problem with his fellow students, interns, residents, and senior staff; he gains familiarity with ideas and concepts by actively manipulating them.

The student crystallizes his idea of the best diagnostic and therapeutic approach to his particular patient. He identifies the reasons for each of these decisions. He has real curiosity to see if his evaluation of the situation is correct or in error.

Under guidance from his fellow students, from house staff, and from faculty of all ranks, he slowly appreciates the difficulties of learning a system of medicine in which disease manifestations and host responses are highly variable. He learns that the "textbook picture" is a composite seldom seen. Part of a doctor's learning is only experimental. He knows from living with his patients that certain things are possible, but he may not know the underlying sequence of events. In other instances, his learning is more precise because he understands the mechanism of the disease and can control some of the important variables. He must learn both the liabilities and virtues of attempting to use logic in clinical practice.

The goal of the Department of Medicine is for the student to have as many learning experiences as possible in which he plays an active role. We hope that he will enjoy these learning experiences so much that he will continue them as long as he sees patients. We are not interested in covering the entire field of medicine. The student will engage in extensive post-doctoral clinical or research training. We want him to acquire the scientific knowledge, clinical skills, and learning habits that will enable him to identify and solve new problems as he encounters them. We are not concerned that a new area of knowledge is being explored without our guidance.

In caring for our patients with ill-defined genetic and acquired differences and with many variables of unknown strength at play, many erroneous conclusions are drawn. The student has to learn to examine statements, both oral and written, with care, and to ask of all authorities the source of data which underlie their conclusions. One way for the student to learn the difficulties in drawing accurate conclusions about biological systems is to give him the opportunity to establish some fact on the basis of his own research. This is a very effective method of

teaching. The intellectual discipline involved better prepares the future clinician for the role of a lifetime learner. The experience also enables the academically-oriented student to assess his own potentialities for an investigative career.

MED-201. *Introduction to Clinical Medicine.* This course is designed to introduce the student to the methods involved in obtaining information about patients and their problems by means of accurate and complete taking of history and performance of physical examination and laboratory examination. Early in the course, the student is taught the methodology of the patient interview, the essentials of the examination of various organ systems, and the techniques and meaning of the hematological and other laboratory examinations by means of introductory lectures and experience with patients on the ward and in the laboratory. Information obtained in the other first year courses is correlated with clinical manifestations of health and disease. In the latter part of the course, the abnormalities found in the physical examination of certain organ systems are correlated with the abnormalities of laboratory values found in such patients. Patient conferences are used to demonstrate the value of bringing to bear all the means of obtaining data about the patient in solving his problems. The student is expected to learn to do this in patients with whom he has contact during the ward sessions.

Elective Courses

MED-238(B). *Electron Microscopy of the Gastrointestinal Tract.* Weight: 8. Terms 4 and Summer or 1 and 2 or 3 and 4: April-Aug., Sept.-Jan., Jan.-May. Dobbins

MED-207(C). *Advanced General Medicine.* Weight: 8. Every term. Wyngaarden and Medicine Staff

MED-209(C). *Allergy and Respiratory Diseases.* Weight: 8. Every term. Buckley, Kilburn, Kylstra, MacMahon, Menefee, Nagaya, Pratt, Saltzman, and Sieker

MED-211(C). *General and Behavioral Medicine.* Weight: 7. Every term. Bogdonoff and Klein

MED-213(C). *Cardiovascular Diseases.* Weight: 8. Every term. McIntosh, Orgain, Floyd, Wallace, Morris, Peter, Estes, Whalen, and Department of Medicine Staff

MED-215(C). *Clinical Dermatology.* Weight: 8. Every term. Callaway and Tindall

MED-217(C). *Gastroenterology.* Weight: 8. Every term. Tyor, Dobbins, Hijmans, McLeod, Ruffin, and Young

MED-221(C). *Metabolism and Endocrinology.* Weight: 8. Every term. Lebovitz, McPherson, Nicholson, Bressler, Gibbs, and Turkington

MED-227(C). *Rheumatic Diseases.* Weight: 7. Every term. Kerby, Persons, Roberts, and Department of Medicine Staff

MED-229(C). *Nephrology.* Weight: 8. Every term. Robinson, Andreoli, Bennett, Clapp, Gunnells, Hayes, and Peschel

MED-231(C). *Clinical Hematology.* Weight: 6. Every term. Rundles, Silberman, Laszlo, and Rosse

MED-232(C). *Clinical Oncology.* Weight: 6. Every term. Rundles, Silberman, Laszlo, and Rosse

MED-234(C). *Metabolic-Genetic Disease Seminar.* Weight: 3. Term 3: Jan.-March. Wyngaarden, Sidbury, Appel, Jones, Rowe, Caskey, Kredich, and Department of Medicine Staff

Microbiology and Immunology

Professor N. Conant, *Chairman;** Professors D. Amos, J. Beard, E. Day, J. Larsh, D. T. Smith, H. Willett; Associate Professors R. Burns, S. Osterhout, R. Metzgar, R. Wheat, C. Zmijewski; Assistant Professors W. Boyle, H. Nielsen; Associate C. Buckley, J. Southworth

Research Associates R. Buckley, G. Hill, S. Oleinick, H. Seigler, C. Tritschler; *Research Assistant* I. Cohen; *Technical Associate* H. Craig; *Instructors* A. Proctor, F. Ward; *Fellow* B. Hattler

Required Course

The required course in *Microbiology* (MIC 200) is given in the second term of the first year. An intensive study is made of the common bacteria, fungi, and viruses which cause disease in man. The scope of the laboratory course is reasonably wide and acquaints the student with all the methods and procedures employed in bacteriological laboratories. Most of the lecture time is devoted to the immunological and epidemiological aspects of infection. The instruction is designed to give the students a clear concept of: (1) how organisms gain entrance to the body, (2) the type of toxins which they produce, (3) the nature of the immune bodies which are produced by the host, and (4) the methods of preventing the disease by active and passive immunization.

Elective Courses

MIC-231(B). *Fundamentals of Immunology.* Weight: 3 in 18 weeks. Terms 1 and 2: Sept.-Jan. Amos, Boyle, and C. E. Buckley

MIC-233(B). *Immunological Studies of Human Tissue Antigens.*

*Effective July 1, 1968, the chairman will be Dr. W. K. Joklik.

Weight: 6 in 18 weeks. Terms 1 and 2 or 3 and 4: Sept.-Jan., Jan.-May. Metzgar

MIC-310(B). *Microbial Physiology.* Weight: 3. Terms 3 and 4: Jan.-May. Burns

MIC-313(B). *Immunohematology.* Weight: 2 in 18 weeks. Terms 1 and 2: Sept.-Jan. Zmijewski

MIC-314(B). *Immunochemistry I. Antibodies.* Weight: 2 in 18 weeks. Terms 1 and 2: Sept.-Jan. Day

MIC-315(B). *Immunochemistry II. Antigens.* Weight: 2 in 18 weeks. Terms 3 and 4: Jan.-May. Day

MIC-316(B). *Immunogenetics.* Weight: 2 in 18 weeks. Terms 1 and 2: Sept.-Jan. Amos, Boyle, and Southworth

MIC-325(B). *Medical Mycology.* Weight: 4. Month of July. Conant and Nielsen

MIC-336(B). *Human Histocompatibility Testing Procedures.* Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, April-May. Zmijewski

MIC-338(B). *Microbial Biochemistry.* Weight: 5. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, April-May. Burns

MIC-339(B). *Diagnostic Microbiology and Infectious Diseases.* Weight: 8. Terms 1, 2, 3, and 4: Sept.-Nov., Nov.-Jan., Jan.-March, April-May. Osterhout

Neurologic Sciences Program

Neurology: Professors A. Heyman, T. Peele; Associate Professors S. Appel, J. Kanfer, M. Kinsbourne, J. Pfeiffer; Assistant Professors C. Armstrong, I. Brody, S. Schanberg, J. West; Associates R. Lopez, R. McMasters; Fellows A. Escueta, S. Lunzer, L. Pearce; Residents C. Gerber, M. Rozear, N. Weng; *Neuropathology:* Professor S. Vogel; Assistant Professors A. Dudley, G. Klintworth; *Neuroradiology:* Associate Professors J. Goodrich, J. Goree; Assistant Professors R. Gorten, I. Johnsrude; Associate J. Jimenez; *Neurosurgery:* Professor G. Odom; Associate Professors B. Nashold, G. Tindall; Assistant Professor S. Mahaley; *Pediatric Neurology:* Professor J. Sidbury; Associate Professors M. Kinsbourne, T. Peele; Associate A. Renuart; *Electroencephalography:* Professor W. Wilson; Associate Professor R. Green

The Neurologic Sciences Program was established in April, 1964, to integrate and enlarge the neurologic teaching and research facilities in the Medical Center. It is an interdisciplinary unit comprised of several preclinical and clinical departments whose interests are specifically related to the various neurologic sciences. Its purpose is to provide greater learning experience for the undergraduate student and more comprehen-

sive opportunities for training and research at the graduate level. The Program is designed to train physicians and scientists who will have an understanding of the concepts and mechanisms of neurobiology with particular application to the diseases of man.

The Program is directed by an operating committee composed chiefly of the chairmen of the various departments of the Medical School related to the neurologic sciences. The staff members include personnel from ancillary divisions in the Medical Center such as neurophysiology, neuroradiology, clinical pharmacology, pediatric neurology, and psychology. Joint faculty appointments in neurology and in other clinical or basic science departments have been encouraged and have provided an integrated approach to the teaching and research training of the undergraduate and graduate physician. Although each staff member has his individual teaching and research interests, all participate actively in joint conferences, ward rounds, and seminars given primarily for the undergraduate and graduate student interested in the neurologic sciences. These teaching activities are designed to provide the student with an understanding of the problems of clinical neurology as well as to introduce him to research experience which will serve as a foundation for his future study of the nervous system.

Research laboratories are available for undergraduates and graduates preparing for careers as physician-scientists, and elective courses are offered in the Medical Center for junior and senior medical students planning to specialize in one of the neurologic or behavioral sciences. The Program thus offers comprehensive opportunities for unique interdisciplinary training in the basic and clinical neurosciences.

Resident Training Program

The neurology residency at Duke University Medical Center is an approved three-year program designed to provide training and experience in clinical neurology and in the ancillary neurologic disciplines. The residency program also offers instruction in basic neurosciences and opportunities to utilize modern research techniques in laboratories established by the Neurologic Sciences Program. Clinical training in neurology emphasizes the principles of diagnosis and treatment of neurologic disorders with teaching carried out primarily at the bedside and in small conferences or seminars. The neurology resident has continuous clinical experience throughout his period of training but with increasing supervisory and teaching responsibilities. During the latter half of his training, each resident is encouraged to develop his research aptitudes and to participate actively in clinical and laboratory investigations.

Teaching ward rounds for students, fellows, and resident physicians are conducted by senior staff members of the Neurologic Science Program five mornings a week at Duke University Hospital and the affiliated Veterans Administration Hospital. Outpatient clinics are held twice

weekly for follow-up care of patients discharged from the hospital and for treatment of new patients referred from other clinics or outside physicians. An extensive series of teaching conferences and seminars comprise an integral part of undergraduate and postgraduate training.

Elective Courses

NSP-202(C). *Introduction to Neuroscience.* Weight: 8. Term 1: Sept.-Nov. Hein, Gerber, Schanberg, Armstrong, Somjen, and Robertson

NSP-204(C). *Correlative Neuroscience.* Weight: 1. Every term. Brody and Neurology Staff

NSP-206(C). *Clinical and Laboratory Clerkship in Neurology.* Weight: 8. Every term. Heyman and Neurology Staff

NSP-208(C). *Cognitive Neurology.* Weight: 8. Term 1: Sept.-Nov. Kinsbourne

NSP-212(C). *Physiological Basis of Neuromuscular Diseases.* Weight: 1. Every term. Brody, Armstrong, and West

NSP-214(C). *Research Preceptorship in Molecular Neurobiology.* Weight: 8. Every term. Appel

PHA-252(B). *Pharmacology and Biochemistry on Neural Transmitters.* Weight: 3. Terms 1 and 2: Sept.-Jan. Schanberg and Kirshner

Obstetrics and Gynecology

Professor R. Parker, *Chairman*; Professors F. Carter, W. Cuyler, W. Thomas; Associate Professors W. Cherny, C. Christian, C. Peete; Associate Clinical Professors E. Easley, R. Pearse; Assistant Professors M. Crenshaw, A. Christakos, G. Wilbanks; Assistant Clinical Professors T. Adkins, W. Graham, K. Podger; Associates C. Von Roebel, R. Anderson; Clinical Associates T. Stokes, R. Williamson

Research Associates C. P. Jones, L. Kaufmann; *Instructors* C. Hammond, D. Moore, F. Nicks, N. Copeland, P. Pearce; *Fellows* D. Halbert, J. D. Eggers, R. Yowell, R. Cefalo, C. Parker, B. Younger, W. C. Jones; *Residents* Z. Newton, III, L. Walker, B. Baker, W. Goldston, T. Wyatt, K. Johnson, E. Sowell, E. Long, S. Herring, J. Danford; *Assistant Residents* R. Bechtel, L. Wasserman, G. Maroulis, A. Bahrani

Required Courses

The first year student receives instruction in the fundamentals of obstetric and gynecologic history and pelvic examination during their course in Introduction to Clinical Medicine.

The second year student spends seven weeks in *General Obstetrics and*

Gynecology (OBG-202). The student attends lectures, works daily in the general and special outpatient clinics, and is assigned patients on the obstetric and gynecologic wards. Students sharing in patient care and in teaching exercises is required. Tutorials are held daily with the senior faculty encouraging student participation. Lectures, Clinical Conference, Gynecologic Pathology Conference, Endocrine Conference, and Correlative Seminars are a part of his learning experience and are outlined below.

Elective Courses

OBG-205(C). *Gynecologic Cancer.* Weight: 2. Every term. Parker and Wilbanks

OBG-207(C). *Pathology. Obstetrical and Gynecological.* Weight: 2. Every term. Wilbanks, Parker, Gynecology Resident on Surgical Pathology

OBG-211(C). *Preparation for Practice.* Weight: 8. Every term. Parker and Obstetrics and Gynecology Staff

OBG-213(C). *Research Training.* Weight: 6. Every term. Parker and Obstetrics and Gynecology Staff

OBG-215(C). *The Infertile Couple.* Weight: 1. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Peete and Christakos

OBG-217(C). *Human Embryology.* Weight: 1. Terms 2 and 3: Nov.-March. Cherny

OBG-229(C). *Endocrinology Seminar.* Weight: 1. Every term. Christian, McPherson, Lebovitz, and Staff

OBG-231(C). *Clinical Reproductive Endocrinology.* Weight: 4. Every term. Christian, Obstetrics and Gynecology Staff, and Fellows in Endocrine Division

OBG-233(C). *Neuroendocrinology.* Weight: 8. Term 2 or Summer: Nov.-Jan., June-Aug. Christian

Ophthalmology

Professor J. Wadsworth, *Chairman*; Professor Emeritus B. Anderson, Sr.; Clinical Professor Emeritus F. Stocker; Associate Professor B. Anderson, Jr.; Assistant Professors A. Chandler, J. Gills; Clinical Associate S. McPherson, Jr.

Research Associate G. Klintworth; *Instructors* E. Reese, J. Seaber, J. Karickhoff; *Clinical Instructor* L. Turner; *Clinical Assistant* T. Kerns; *Residents* J. Karickhoff, T. Foster, F. Hannah; *Assistant Residents* D. Dephouse, D. Driver, J. Herring, H. Lefler, J. Price, D. Thier, N. Young



Elective Courses

OPT-201(C). *Investigative Ophthalmology.* Weight: 8. Every term. Gills and Anderson

OPT-203(C). *General Ophthalmology.* Weight: 8. Every term. Chandler

OPT-205(C). *Medical Ophthalmology.* Weight: 1. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Chandler and Staff

OPT-207(C). *Basic Ophthalmic Sciences.* Weight: 1. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Wadsworth, Staff, and outside contributors

OPT-209(C). *Refraction.* Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Chandler

OPT-211(C). *Neuro-ophthalmology.* Weight: 1 or 2. Every term. Gills

OPT-213(C). *Ophthalmic Pathology.* Weight: 1. Every term. Wadsworth and Klintworth

OPT-215(C). *Ocular Diseases in Children.* Weight: 1. Every term. Chandler

Pathology

Professor T. Kinney, *Chairman*; Professors B. Fetter, D. Hackel, B. Trump, J. Vazquez, F. Vogel; Clinical Professor P. Kotin; Professor Emeritus W. Forbus; Associate Professors J. Elchlepp, A. Musser, P. Pratt, D. Rowlands, Jr., J. Sommer, B. Wittels; Assistant Professors P. Burkholder, W. Bradford, A. Dudley, W. Johnston, G. Klintworth, H. Sage, G. Spooner, L. Taylor, M. Vazquez

Instructors S. Brawley, III, B. Dick; *Technical Associates* C. Bishop, J. Pickett; *Fellows* A. Arstila, F. Ginn, D. Graham, J. Hagadorn, W. Jurgelsky, R. Mathews, N. Ratliff, A. Saladino; *Resident* R. Guerry; *Assistant Residents* E. Bossen, S. Butcher, J. Gaede, S. Gardanier, II, W. Gardner, F. Graybeal, E. Kamstock, S. Lang, M. Quinn, R. Zipf; *Interns* G. Alderson, L. Ayers

Required Course

The required course in *Pathology* (PTH-200) is given during the second term of the first year. The fundamentals of Pathology are presented to the student by a correlated study of gross and microscopic material illustrating the structural changes in disease. Lectures developing broad concepts of disease processes are given by the members of the senior staff. Conferences with small groups of students under the guidance of a staff member are scheduled for purposes of more intimate discussion.

The emphasis is placed on etiology and pathogenesis of disease and the experimental approach to an understanding of disease. Animal experiments performed either by students or by demonstrators are used to correlate functional and structural changes in disease. The group work is supplemented by weekly conferences involving the class as a whole and dealing with problems presented by current autopsies and with other problems of general importance. Student collaboration in postmortem studies is required. Cases thus studied are presented by the student before the class under the direction of the staff; this takes the form of a clinical-pathologic conference in which each student plays a particular role.

Elective Courses

PTH-201(B). *The Pathologic Basis for Clinical Medicine.* Weight: 4. Term 1: Sept.-Nov. Hackel and Pathology Staff

PTH-203(B). *Ophthalmic Pathology.* Weight: 3. Term 4: April-May. Klintworth

PTH-209(B). *Obstetrical and Gynecological Pathology.* Weight: 3. Term 4: April-May. Johnston, Fetter, Amatulli, and Pathology Staff

PTH-223(B). *Autopsy Pathology.* Weight: 8. Every term. Rowlands and Pathology Staff

PTH-225(B). *Cardiovascular Pathology.* Weight: 2. Term 1: Sept.-Nov. Hackel and Estes

PTH-237(B). *Surgical Pathology.* Weight: 4. Term 4: April-May. Fetter

PTH-340(B). *Pathology of the Lymphoid System.* Weight: 3. Term 2: Nov.-Jan. Rowlands

PTH-342(B). *Special Topics in Pathology.* Weight: 8 for 9 week term. Every term. Kinney and Pathology Staff

PTH-344(B). *Experimental Neoplasia.* Weight: 3. Term 4: April-May. Kotin and Pathology Staff

PTH-346(B). *Subcellular and Molecular Pathology.* Weight: 2. Terms 1 and 2: Sept.-Jan. (alternate possible). Trump and Sommer

PTH-348(B). *Practical Surgical Pathology.* Weight: 8. Every term. Fetter and Staff

PTH-352(B). *Biochemical Pathology.* Weight: 2. Terms 2 or 3: Nov.-Jan., Jan.-March. Wittels

PTH-353(B). *Advanced Neuropathology.* Weight: 3. Terms 1 and 2: Sept.-Jan. Vogel and Klintworth

PTH-359(B). *Instrumentation in Ultrastructural Pathology.* Weight: 4. Terms 3 and 4: Jan.-May. Trump and Pathology Staff

PTH-360(B). *Enzymatic and Determinative Histochemistry.* Weight: 2. Terms 3 and 4: Jan.-May. Trump and Sommer

PTH-362(B). *Pathology of the Kidney.* Weight: 2. Term 2: Nov.-Jan. Burkholder

PTH-364(B). *Orthopaedic Pathology.* Weight: 1. Term 4: April-May. Sommer and Mathews

PTH-366(B). *Pulmonary Pathology and Post-Mortem Pathophysiology.* Weight: 3. Term 1: Sept.-Nov. Pratt

PTH-368(B). *Neonatal and Pediatric Pathology.* Weight: 3. Terms 1 or 2: Sept.-Nov., Nov-Jan. Bradford and M. Vazquez

PTH-370(B). *Use of a Central Clinical Laboratory in Laboratory Medicine.* Weight: 4. Term 2. A. W. Musser, Spooner, Mauney, and Taylor

Pediatrics

Professor J. Harris, *Chairman*;* Professors J. Arena, S. Dees, A. McBryde, J. Sidbury, Jr.; Professor Emeritus W. Davison; Clinical Professor A. London; Associate Professors J. Boineau, W. DeMaria, M. Kinsbourne, F. Porter, M. Spach, A. Spock; Clinical Associate Professor H. Noller; Assistant Professors G. Brumley, Jr., R. Canent, Jr., J. Fowler, H. Harris, H. Lowenbach, G. Lyon, Jr., T. Peele, A. Renuart; Assistant Professor Emeritus L. Hohman; Clinical Assistant Professors S. Cornwall, J. King, W. London; Associates N. Enzer, J. Jones, E. Long, S. Ousterhout; Clinical Associates D. Shearin, G. Watson, B. Webb; Research Associates E. Pugh, B. Sheikholislam

Instructors C. Ayers, S. Blumenschein, R. Buckley, H. Heick, M. Jarmakani, G. F. Powell, G. K. Powell, L. Rogers, S. Zirkle; *Clinical Instructors* C. Bailey, J. Brewer, M. Claxton, F. Eastwood, W. Farley, A. Johnson, T. Jones, D. Lockhart, N. Moseley, C. Neal, III, A. Rice, B. Skinner, J. Whatley; *Fellows* C. Ayers, D. Berry, S. Blumenschein, T. Graham, Jr., H. Heick, M. Jarmakani, P. Jewett, B. Keenan, T. King, R. Krueger, G. F. Powell, G. K. Powell, H. Risemberg, L. Rogers, B. Sheikholislam, P. Wubbena, Jr., S. Zirkle; *Chief Resident* J. Powell; *Senior Residents* J. Ashe, J. Hendley, J. Minus, J. Rouse, W. Yancey; *Assistant Residents* A. Alexander, G. Becker, R. Ford, F. Morriss, Jr., L. Obenour, V. Perriello, Jr., C. Roe; *Junior Assistant Resident* T. Carlton, Jr.; *Interns* J. Beshear, H. Boggess, K. Crumley, E. Fine, V. Giordano, M. Levine, C. Lynch, Jr., R. Marshall, Jr., A. Pezzarossi, S. Smith

Required Course

The basic course in *Pediatrics* (PED-200) consists of seven weeks during the second year, the time being equally divided between clinic and ward services. Students participate in the morning subspecialty clinics,

*Effective July 1, 1968, the chairman will be Dr. S. L. Katz.

the well baby clinics, and afternoon general medical pediatric clinics, seeing both new and return patients. Conferences are held at the end of the following speciality clinics: hematology, metabolism, neurology, cardiorenal, allergy, convulsive disorders, behavior problems, and well baby care. There are conferences in the general pediatric clinic with informal presentation and discussion of patients. On the wards, the students assist as clinical clerks and are assigned patients in rotation. They make daily rounds with the staff. Pediatric nursing procedures are demonstrated by the nursing supervisor. The different subspecialty groups—cardiology, hematology, allergy, dermatology, and metabolism—make ward rounds weekly. A joint conference with the senior and resident staff is held twice weekly on topics of pediatric interest, clinicopathologic discussions, case presentation, and for guest lecturers. There is a weekly radiology conference at which the interesting cases of the week are presented and discussed with the radiologist.

Elective Courses

PED-201(C). *General Pediatrics.* Weight: 8. Every term. Harris and Pediatric Staff

PED-203(C). *Pediatric Neurology.* Weight: 8. Terms 2 and 4: Nov.-Jan., March-May. Kinsbourne and Pediatric Staff

PED-204(C). *Convulsive Disorders and Mental Retardation.* Weight: 8. Every term. Renuart

PED-209(C). *Pediatric Endocrinology.* Weight: 8. Every term. Sheikholislamb and Keenan

PED-215(C). *Metabolic Disorders in Children.* Weight: 4. Every term. Sidbury

PED-217(C). *Pediatric Hematology.* Weight: 8. Every term. Porter

PED-221(C). *Poison Control.* Weight: 2. Every term. Arena and Osterhout

PED-223(C). *Preceptorship in General Pediatrics.* Weight: 6. Terms 2 or 3: Nov.-Jan., Jan.-March. McBryde and Pediatric Staff

PED-225(C). *Newborn and Premature Infants.* Weight: 8. Terms 3 or Summer, Jan.-March, June-Aug. McBryde and Brumley

PED-227(C). *Behavioral Aspects of Pediatric Illness.* Weight: 4. Every term. Jones, Enzer, Anderson, Keith, Stedman, and Leventhal

PED-229(C). *Research Preceptorship in Child Development.* Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Harris and Pediatric Staff

PED-231(C). *Clinical Pediatric Cardiology.* Weight: 8. Every term. Spach, Canent, and Boineau

PED-233(C). *Allergy, Clinical Immunology, and Pulmonary Diseases.* Weight: 8. Every term. Pediatric Staff

PED-235(C). *Pediatric Oncology.* Weight: 8. Every term. Lyon

PED-239(C). *Perinatal Physiology.* Weight: 8. Terms 1 or 4: Sept.-Nov., March-May. Brumley and Crenshaw

NSP-208(C). *Course in Cognitive Neurology.* Weight: 8. Term: Sept.-Nov. Kinsbourne

Department of Physiology and Pharmacology

Professor D. C. Tosteson, *Chairman*

Division of Basic Physiology: Professor P. Horowicz, *Head. Laboratory of Cardiopulmonary Physiology:* Associate Professor J. Salzano, Chief; Associate Professor E. Long. *Laboratory of Cellular Endocrinology:* Assistant Professor R. Fellows, Jr., Chief. *Laboratory of Cellular Transport Processes:* Professor D. Tosteson, Chief; Associate Professor T. McManus; Assistant Professors T. Andreoli, P. Lauf; Associates C. Franzini-Armstrong, C. Lee; Research Associate M. Tieffenberg; Post-doctoral Fellow J. Gutknecht. *Laboratory of Cerebral Physiology:* F. Jöbsis, Chief. *Laboratory of Integrative Neurophysiology:* Associate Professor G. Somjen, Chief. *Laboratory of Molecular Physiology:* Professor J. Blum, Chief; Associate Professor G. Padilla; Research Associate V. Kahn. *Laboratory of Muscle Physiology:* Professor P. Horowicz, Chief; Associate R. Eisenburg; Research Associates P. Gage, R. Venosa

Division of Clinical Physiology: Assistant Professor T. Andreoli, *Head*; Associate Professor M. Wolbarsht; Assistant Professors C. Armstrong, S. Boyarsky, M. Dick, R. Gibbs, J. Greenfield, J. Kylstra; Associates C. Gerber, H. Thompson; Instructor J. Hijmans

Division of Engineering Physiology: Professor J. Moore, *Head. Laboratory of Cardiac Physiology and Pharmacology:* Associate Professor E. Johnson, Chief; Associate N. Anderson; Research Associate M. Lieberman. *Laboratory of Cellular Neurophysiology:* Professor J. Moore, Chief; Associate Professor T. Narahashi; Assistant Professor H. Wachtel

Division of Basic Pharmacology: Professor E. Renkin, *Head. Laboratory of Biochemical Pharmacology:* Professor F. Bernheim, Chief; Associate Professor A. Ottolenghi. *Laboratory of Circulatory Pharmacology:* Professor E. Renkin, Chief; Research Associates D. Garlick, S. Gray, H. Viveros. *Laboratory of Hematological Pharmacology:* Professor Emeritus G. Eadie, Chief

Division of Clinical Pharmacology: Professor R. Bressler, *Head. Laboratory of Cellular Pharmacology:* Associate Professor P. Hochstein, Chief; Associate N. Begin-Heick. *Laboratory of Metabolic Pharmacology:* Pro-

fessor R. Bressler, Chief; Assistant Professors K. Brendel, S. Schanberg. *Laboratory of Molecular Pharmacology:* Associate Professor L. Lack, Chief. *Laboratory of Renal Pharmacology:* Assistant Professor B. Nechay

Division of Marine Physiology and Pharmacology: Professor R. Brauer, *Head. Wrightsville Marine Bio-Medical Laboratory:* Professor R. Brauer, Chief; Associate Professor G. Padilla

Required Course

The required course in *Physiology* (PHY-200) consists of lectures, seminars, and laboratory exercises offered by all members of the Physiology staff during the fall term of the first year. The core course in *Pharmacology* (PHA-202) consists of lectures, seminars, and laboratories offered by all members of the Pharmacology staff during the second term of the first year. These courses emphasize those facts and general principles of Physiology and Pharmacology which all medical students should learn no matter which of the many careers in medicine and the medical sciences they may choose to pursue.

Elective Courses

PHY-203(B). *Clinical Physiology and Pharmacology.* Weight: 4. Terms 1 and 2: Sept.-Jan. R. Bressler and Andreoli

PHY-204(B). *Topics in Muscle Physiology.* Weight: 3. Terms 1 and 2: Sept.-Jan. Horowicz and Physiology and Pharmacology Staff

PHY-217(B). *Tutorial in Physiology and Pharmacology.* Weight: 6. Terms 1 and 2, 3, 4, and summer: Sept.-Jan., Jan.-May, June-Aug. Physiology and Pharmacology Staff

PHY-256(B). *Molecular Physiology of Subcellular Organization.* Weight: 2. Terms 3 and 4: Jan.-May. Blum

PHY-258(B). *Environmental and Underwater Physiology.* Weight: 6. Summer Term: June-Aug. Brauer and Physiology and Pharmacology Staff

PHY-271(B). *Foundations of Contemporary Physiology.* Weight: 4. Terms 1 and 2: Sept.-Jan. Physiology Staff

PHY-273(B). *Intercellular Transmission.* Weight: 2. Terms 1 and 2: Sept.-Jan. Narahashi, Somjen, and Gage

PHY-281(B). *Physiological Instrumentation.* Weight: 4. Terms 3 and 4: Jan.-May. Moore

PHY-366(B). *Cell Growth and Differentiation.* Weight: 2. Terms 1 and 2: Sept.-Jan. Padilla

PHY-368(B). *Cardiac Cellular Physiology.* Weight: 2. Terms 1 and 2: Sept.-Jan. Johnson

PHY-371(B). *Topics in Pulmonary and Cardiovascular Physiology.* Weight: 2. Terms 3 and 4: Jan.-May. Salzano

PHY-372(B). *Research in Physiology and Pharmacology.* Weight: by individual arrangement. Terms 1 and 2, 3, 4 and Summer; Sept.-Jan., Jan.-May, June-Aug. Physiology and Pharmacology Staff

PHY-373(B). *Cellular Endocrinology.* Weight: 2. Terms 1 and 2: Sept.-Jan. Physiology and Pharmacology Staff

PHY-374(B). *Cellular Neurophysiology.* Weight: 2. Term 1 and 2: Sept.-Jan. Moore and Narahashi

PHY-376(B). *Cellular Metabolism and Energetics.* Weight: 3. Terms 3 and 4: Jan.-May. Jöbsis

PHY-377(B). *An Introduction to Membrane Physiology.* Weight: 2. Terms 3 and 4: Jan.-May. Tosteson

PHY-379(B). *Physiology and Pharmacology of the Central Nervous System.* Weight: 2. Terms 3 and 4: Jan.-May. Somjen

PHY-385(B). *Mathematics of Physiological Systems.* Weight 3. Terms 3 and 4: Jan.-May. Moore and Physiology and Pharmacology Staff

PHA-250(B). *Pharmacology and Biochemistry of the Red Cell.* Weight: 2. Terms 1 and 2: Sept.-Jan. Hochstein and Rosse

PHA-252(B). *Pharmacology and Biochemistry of Neural Transmitters.* Weight: 3. Terms 1 and 2: Sept.-Jan. Schanberg and Kirshner

PHA-254(B). *Enterohepatic Circulation.* Weight: 1. Term 1: Sept.-Nov. Lack

PHA-260(B). *Cellular Aspects of Drug Action.* Weight: 3. Terms 3 and 4: Jan.-May. Ottolenghi, Bernheim, Narahashi, Wilder

PHA-272(B). *Foundations of Contemporary Pharmacology.* Weight: 4. Terms 3 and 4: Jan.-May. Pharmacology Staff

PHA-380(B). *Physiology and Pharmacology of the Circulation.* Weight: 2. Terms 1 and 2: Sept.-Jan. Renkin

Psychiatry

Professor E. Busse, *Chairman*; Professors I. Alexander, K. Back, J. Botwinick, B. Bressler, S. Cohen, B. Dai, J. Fowler, H. Lowenbach, G. Maddox, J. McKinney, W. Obrist, J. Rhoads, W. Wilson; Professor Emeritus L. Hohman; Associate Professors J. Altrocchi, L. Borstelmann, R. Carson, H. Crovitz, C. Eisdorfer, I. Gehman, R. Green, H. Harris, P. Hein, F. Hine, A. Krugman, M. Lakin, C. Llewellyn, E. Palmore, J. Preiss, B. Shmavonian, G. Silver, D. Stedman, L. Thompson, A. Verwoerdt; Assistant Professors W. Anderson, K. Barcley, E. Clifford, E. Crovitz, E. Ellinwood, N. Enzer, B. Feather, L. Graham, M. Huse, J. Jones, C. Keith, I. Kremen, M. LaBarre, D. Mayfield, V. Mecke, S. Needell, Z. Pauk, E. Pfeiffer, J. Reckless, R. Tomlinson, H. Wang, M. Wertz, W. Zung; Assistant Clinical Professor P. Irigaray; Associates M.

Amaya, H. Coppedge, J. Elmore, D. Fowler, D. Gianturco, B. Hubbard, D. Leventhal, D. Murphy, A. Powell, E. Reilly, M. Short, W. Shows, W. Van Veen, P. Walker

Staff, Highland Hospital, Asheville, North Carolina: Assistant Professors M. Baldwin, D. Johnson, C. Neville; Associates N. Mitchell, A. Sagberg, S. Workman; Instructors G. Doss; Psychiatric Social Workers R. Bush, T. Fox, E. Harkins, A. Jackson, D. Oestreich

Instructors R. Alexander, J. Ball, E. Crocker, T. Haizlip, E. Heath, F. Harrison, J. Jackson, R. Kerr, M. Leventhal, V. Liederman, J. Mallory, R. Martin, C. McRee, N. Pfeiffer, M. Reedy, P. Schreiber, M. Sottarelli; *Research Associates* F. Jeffers, F. Wilkie; *Assistant* D. Heyman; *Consultant* W. LaBarre; *Fellows* N. Anderson, R. Boyarsky, F. Delse, O. Escalante, G. Fillenbaum, N. Haslett, S. Hastings, A. Klein, P. Liederman, J. Mancusi, G. Marsh, J. Martin, R. Morris, J. J. McNiel, L. Musella, J. Nunnally, M. Ominsky, D. Peak, J. Rees, R. Schlossel, E. Sherman, S. Sibley, P. Smith, M. Troyer, I. Talton, B. Wasik; *Chief Resident* D. Fowler; *Residents* O. Brodie, S. Conna, J. Gallemore, H. Goldman, M. Haas, J. Lovvorn, G. Preston, C. Rich, S. Rubin, C. Shimm, K. Thompson, A. Whanger; *Assistant Residents* E. Allen, J. Bonner, L. Cancellaro, A. Carter, S. Davis, R. Demas, R. Eisaman, R. Friedel, A. Grant, G. Hayter, B. Hydrick, R. Kennan, S. Lee, J. Nash, C. Norton, C. Patterson, R. Ray, D. Robinson, C. Wells; *Psychology Interns* J. Cardillo, M. Emery, D. Lamb, R. Mack, D. Novak, S. Rifkin, W. Thompson

Required Courses

Human Behavior and Psychiatry

In addition to required and elective courses in Clinical Psychiatry this Department offers, through its Division of Human Behavior, course work in the biological and behavioral sciences which form the bases of Psychiatry and the psychological aspects of medicine.

During the first year, 60 hours are devoted to *Human Behavior* (PSY-200). A lecture series introduces the student to the concepts, techniques, and data of the various sciences most relevant to an undersanding of human behavior, thus providing a multifaceted approach to that understanding. Lecturers from the fields of behavioral Psychology, Psychiatry, Pediatrics, and Sociology discuss behavior from the points of view of heredity and constitution; the central and autonomic nervous systems; inner emotional conflicts and interpersonal relationships; learning, cognition, and perception; and relationships between the individual and his family, the social institutions, and his sub-culture and culture. Both functional and developmental points of view are presented and, in connection with the latter, stages in the development of the individual personality are traced. Wherever possible, relationships between

the various approaches to human behavior are stressed. Concurrent with the lectures, a series of small group meetings provide, through the interviewing of patients and group discussion, opportunity for the further assimilation of the lecture material and its application to specific examples of behavior. The small groups also provide opportunities to introduce effective techniques of human interaction and observation of the primary data of human behavior as well as methods of recording and interpreting these observations. In both the didactic and small group laboratory portions of the course, emphasis is placed upon the complementarity of the biological and psychosocial approaches to human behavior and the relevance of such a combined approach for the practice of medicine.

The required second year course in *Clinical Psychology* (PSY-201) is for seven weeks. The student assumes limited responsibility, under supervision, for diagnosis and treatment of patients on the psychiatric wards, in the psychiatric outpatient clinic, and (through the psychosomatic consultation services) on the non-psychiatric wards of the hospitals. Supervision is directed toward two principle areas. The first is the significant application of concepts of diagnosis, psychopathological formulation, and therapy. Concepts in these areas are drawn from both the descriptive-organic-directive and the psychoanalytic-psychosocial-psychotherapeutic contributions to current psychiatric thought. Secondly, supervision is aimed at further developing interpersonal techniques of sensitive observation and therapeutic use of the self. Emphasis is placed upon concepts and techniques applicable to all patients as well as those specifically designated "psychiatric." Didactic instruction includes seminars on the principle neurotic conditions (symptomatic, characterological, and psychophysiological), the major psychoses, emotional problems of childhood, the somatic therapies, psychological testing, and introductory electroencephalography. In addition to rounds and case conferences, students are encouraged to observe psychotherapy and participate in supervised psychotherapeutic encounters whenever appropriate situations can be provided.

Elective Courses

PSY-202(B). *Philosophy of Science and Behavioral Sciences.* Weight: 1. Terms 1 or 2: Sept.-Nov., Jan.-March. Hine

PSY-214(B). *Personality Development II: Adolescence Through Old Age.* Weight: 2. Every term except Summer. Busse, Elmore, and Psychiatry Staff

PSY-215(B). *Comparative Personality Theory.* Weight: 1. Term 3: Jan.-March. E. Crovitz

PSY-237(B). *Language, Communication, Interviewing.* Weight: 1. Term 1: Sept.-Nov. Green and Hein

PSY-250(B). *The Neural Substrates of Perception and Cognition.* Weight: 1. Terms 1 or 2: Sept.-Nov., Nov.-Jan. Ellinwood

PSY-273(B). *Social Structure and the Life Cycle: The Adolescent.* Weight: 1. Terms 1 or 2: Sept.-Nov., Jan.-March. Keith and Maddox

PSY-275(B). *Social Structure and the Life Cycle.* Weight: 2. Every term except Summer. Busse, Maddox, and Palmore

PSY 283(B). *The Negro in American Society.* Weight: 1. Terms 2 or 4: Nov.-Jan., April-May. Jackson

PSY-285(B). *Community Structure.* Weight: 1. Term 3: Jan.-March. Palmore

PSY-287(B). *Human Development.* Weight: 2. Terms 1 or 3: Sept.-Nov., Jan.-March. *To be announced*

PSY-289(B). *Autonomic Conditioning.* Weight: 1. Terms 1 or 2: Sept.-Nov., Nov.-Jan. Shmavonian

PSY-291(B). *Psychophysiologic Methods in Animals and Humans, I and II.* Weight: 2. Term 1: Sept.-Nov. Hein

PSY-293(B). *Learning Theory and Psychopathology.* Weight: 2. Term 3: Jan.-March. Feather

PSY-295(B). *Anatomical Basis of Mind.* Weight: 2. Term 1: Sept.-Nov. Short

PSY-297(B). *Biochemistry of Behavior.* Weight: 2. Term 3: Jan.-March. Short

PSY-299(B). *Preceptorship in Behavioral Science.* Weight: 1-8. Every term. Eisdorfer and Psychiatry Staff

PSY-301(B). *Psychophysiology Seminar.* Weight: 1. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, April-May. Shmavonian and Psychiatry Staff

PSY-303(B). *Child Development and Mental Retardation.* Weight: 2. Terms 1, 3, or 4: Sept.-Nov., Jan.-March, April-May. Stedman

PSY-305(B). *Social and Cultural Aspects of Illness.* Weight: 1. Term 3: Jan.-March. Maddox and Preiss

PSY-213(C). *Personality Development of the Child, Adolescent, and Adult.* Weight: 2. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Harris and Psychiatry Staff

PSY-230(C). *Clinical Research Preceptorship in Community Psychiatry.* Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Eisdorfer, Altrocchi, and Maddox

PSY-232(C). *Preceptorship in Clinical Psychiatric Research Related to Cerebral Metabolism.* Weight: 3. Terms 3 or 4: Jan.-March, March-May. Wang

PSY-234(C). *Research Preceptorship in Clinical Psychopharmacology.* Weight: 1-8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Graham

PSY-241(C). *Inpatient Psychiatry: Environmental and Somatic Therapy.* Weight: 7. Every term. Green and Hine

PSY-243(C). *Principles and Practice of Out-Patient Psychiatry.* Weight: 2. Terms 1 or 4: Sept.-Nov., March-May. Powell and Psychiatry Staff

PSY-245(C). *Psychosomatic Medicine.* Weight: 6. Every term. Cohen and Psychiatry Staff

PSY-251(C). *Community Psychiatry and Mental Health.* Weight: 6. Every term. Llewellyn, Eisdorfer, and Maddox

PSY-253(C). *Principles and Practice of Group Psychotherapy.* Weight: 2. Terms 1, 2, 3, or 4; Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Reckless

PSY-255(C). *Marriage Counseling in Medical Practice.* Weight: 1. Term 1: Sept.-Nov. Llewellyn and Psychiatry Staff

PSY-257(C). *Schizophrenia: Research and Clinical Aspects.* Weight: 1. Term 3: Jan.-March. Tomlinson and Hine

PSY-259(C). *Clinical E.E.G.* Weight: 3. Every term. Wilson

PSY-261(C). *Practice of Psychological Assessment Techniques.* Weight: 2. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Huse

PSY-267(C). *Emotional Problems of Childhood and Adolescence.* Weight: 5. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Harris and Psychiatry Staff

PSY-271(C). *Alcoholism.* Weight: 1. Term 4: March-May. Maddox

PSY-276(C). *Preceptorship in Clinical Psychiatry: Tutorial.* Weight: 7. Every term. Wilson

PSY-277(C). *Geriatric Psychiatry.* Weight: 3. Every term. Busse and Psychiatry Staff

PSY-278(C). *Geriatric Psychiatry.* Weight: 1-8. Every term. Busse and Psychiatry Staff

PSY-279(C). *Preceptorships in Clinical Psychiatry.* Weight: 1-8. Terms 3 or 4: Jan.-March, March-May. Lowenbach

PSY-281(C). *Research Preceptorships in Clinical Psychiatry.* Weight: 3. Terms 3 or 4: Jan.-March, March-May. Lowenbach

PSY-282(C). *Preceptorships in Clinical Psychiatric Research: Design.* Weight: 7. Every term. Wilson

PSY-315(C). *Pathology of Perception and Cognition.* Weight: 2. Term 3: Jan.-March. Ellinwood

PSY-317(C). *Forensic Psychiatry.* Weight: 1. Term 1 or Summer: Sept.-Nov., June-Aug. Pfeiffer

PSY-319(C). *Principles and Practices of Psychiatry.* Weight: 1-8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Reckless

Radiology

Professor R. Lester, *Chairman;* Administrator S. Paine; *Radiodiagnosis Division:* Professors G. Baylin, R. Reeves; Associate Professors W. Barry, M. P. Capp, J. Goree; Assistant Professors J. Jimenez, I. Johnsrude, S. Kim, R. Rice; Associates J. Chen, J. Gehweiler, S. Winkler; Instructor O. Fisher, N. Jarmakani; *Radiation Therapy Division:* Associate Professor P. Cavanaugh, Director; Professor J. Evans; Associate Professor Boyd T. Worde; Assistant Professor M. Raben; Research Associate Raymond U.; Instructor H. Connell; *Nuclear Medicine Division:* Associate Professor J. Goodrich, Assistant Professors R. Gorten, C. Harris; Associates R. Wilkinson, A. Wyrick; Instructor K. Sharpe; *Radiobiology Division:* Associate Professor A. Sanders, Director; Assistant Professor W. Currie; Associate G. Hill; *Radiation Physics Division:* Assistant Professor A. McCrea; *Radiation Technology:* Assistant Professor J. Cahoon, Director; Instructor J. Miller; *Clinical Staff:* Assistant Professors D. Monson, W. Sprunt; Clinical Associates G. Gray, J. Sherrill, G. Schlaseman, T. Thurston. J. Wear; *Radiation Safety:* Associate C. Knight

Residents N. Abramson, K. Allen, W. Bennett, J. Buchanan, J. Carranza, C. Carter, S. Forbis, B. Gerber, R. Gifford, R. Goebel, L. Grundy, T. Hetherington, L. Mazzochi, R. McConnell, B. Meares, J. Ralsten, A. Robinson, J. Sexton, J. Smith, L. Southworth, R. Thompson, T. Thompson, L. Totten, T. Vance, T. Vaughan

During the first year, Radiology is not taught as a separate course but is correlated in many of the established teaching programs. In the second year, *Radiology* (RAD-200) is taught in a two-hour seminar each week throughout the year. Therapeutic Radiology and Nuclear Medicine are taught in a similar manner.

Elective Courses

RAD-223(B). *Radioisotope Methods and Techniques in Biomedical Research.* Weight: 3. Term 1: Sept.-Nov. Sanders, Currie, Harris, and Knight

RAD-225(B). *Methods and Techniques of Radiobiology—Subcellular.* Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, April-May. Sanders, Currie, and Hill

RAD-227(B). *General Radiobiology.* Weight: 2. Term 3: Jan.-March. Sanders, Currie and Hill

RAD-207(C). *Pediatric Radiology.* Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Lester, Capp, and Chen

RAD-209(C). *Clerkship in Neuroradiology.* Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Goree, Jimenez and Radiology Staff

RAD-211(C). *Clerkship in Cardiovascular Radiology.* Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Johnsrude and Fisher

RAD-213(C). *Gastrointestinal Radiology.* Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Rice

RAD-215(C). *Clinical Radiation Therapy.* Weight: 8. Every term. Cavanaugh, Worde, Evans, Raben, Connell, and McCrea

RAD-229(C). *Basic Radiology Clerkship.* Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Entire Radiology Staff

Surgery

Professor D. Sabiston, *Chairman*
Division Chiefs: (Urologic Surgery) Professor J. Glenn; (Orthopaedic Surgery) Professor J. Leonard Goldner; (Otolaryngology) Professor W. Hudson; (Neurosurgery) Professor G. Odom; (Plastic and Maxillofacial Surgery) Professor K. Pickrell; (Thoracic Surgery) Professor W. Sealy; (General Surgery) Professor W. Shingleton; (Anesthesiology) Professor S. Dent; (Dentistry) N. Ross

Professors D. Amos, W. Anlyan, L. Baker, J. Beard, S. Boyarsky, I. Brown, E. Day, J. Dees, N. Georgiade, K. Grimson, W. Peete, R. Postlethwait, G. Quinn, J. Semans, B. Woodhall, W. Young; Professors Emeritus E. Alyea, D. Hart; Associate Professors R. Bonar, F. Clippinger, M. Dillon, R. Gregg, K. Hall, D. McCollum, B. Nashold, D. Silver, W. Smith, D. Stickel, G. Tindall; Associate Clinical Professors J. Davis, T. Takaro; Assistant Professors E. Anderson, F. Bassett, R. Chen, P. Ebert, A. Ferrari, P. Kenan, N. Kirshner, M. Mahaley, F. Mauney, B. Nechay, S. Patterson, H. Seigler, I. Talton, V. Vartanian; Assistant Clinical Professors E. Bugg, R. Coonrad, G. Ferguson, L. Mason, C. Patterson, L. Roberts, M. Schiebel, S. Scott; Associates W. Abbey, D. Beard, R. Benway, P. Breen, A. Craddock, U. Heine, B. King, J. King, F. Knobeloch, R. Massengill, R. Mladick, B. Sapp, R. Snider, E. Thompson; Clinical Associates M. Bourgeois-Gavardin, J. Glasson, W. Hollister, S. Kapoor, J. Kouns, E. Lloyd, T. Pope, N. Schupper, E. Staub

Research Associates R. Absher, R. Bender, D. Bolognesi, R. Fritz, R. Georgiade, L. Gottsch, P. Labay, A. Langlois, P. Rao, J. Riman, L. Sverak, A. Thiele; *Clinical Lecturers* D. Boyer, G. King, L. Meyer, G. Miller, O. Miller, R. Musgrave, W. Roberts, F. Stelling; *Instructors* M. Campbell, L. Gertner, C. Levinson; Clinical Instructors G. Carver, J. Coppridge, C. Dart, H. Deaton, S. Hobart, J. Hughes, W. Inabnet, G. Lazenby; *Fellow* M. Sheikholislam; *Interns* G. Allen, C. Balch, W. Blackburn, J. Cox, F. Crawford, Jr., H. DeHart, R. Gaines, J. Gleysteen, S. Grabias, Jr., L. Hel-

frich, K. Maull, G. Nugent, J. Pickens, S. Robinson, A. Stubbs, Jr., J. Weinerth, R. Wilfong, J. Yarbrough

Required Courses

The required course in *Surgery* (SUR-200) is given in Year 2 and consists of a seven-week term for each student. This constitutes the "core" course in Surgery and during this time the primary aim is the presentation of those *concepts* and *principles* which characterize the discipline of Surgery. Emphasis is placed upon the basic and objective studies which form the foundation of surgical diagnosis and treatment. Stress will be placed upon subjects which have their foundation in objective laboratory and clinical documentation. These topics are presented in informal seminar three times weekly and include antisepsis and surgical bacteriology, wounds and wound healing, inflammation, fluid and electrolyte balance, shock, the metabolic response to trauma, the biology of neoplastic disease, gastrointestinal physiology and its derangements, blood coagulation, thrombosis and embolism.

The students are divided into small groups and each is assigned a Senior Surgical Instructor. Rounds at the bedside are made three times weekly with the Senior Instructor. Each morning the students make rounds with the Resident Staff for discussion of practical surgical diagnosis and therapeutics. At the end of the day a one-hour session is devoted to a Surgical Specialty demonstration which includes conferences concerning Anesthesia, Neurosurgery, Orthopaedics, Otolaryngology, Plastic Surgery, and Urology. Students also will be assigned patients on the surgical wards for diagnosis and management. *Sabiston and Surgical Staff*

A second required course, *Emergency and Disaster Surgery* (MEND) (SUR 337), is given during the second year for one week. The course is designed to teach basic principles of disaster medicine, and its goal is to prepare the student to handle properly most medical and surgical emergencies. Included in the course are lectures and coordinated laboratory exercises which stress the pathophysiologic derangements that occur during the emergencies and which indicate how to correct and treat the derangements. *Silver and Bassett*

Elective Courses

SUR-201(C). *Basic Clinical Surgery.* Weight: 8. Terms 1 or 3: Sept.-Nov., Jan.-March. Shingleton and Peete

SUR-203(C). *Survey of Pulmonary, Esophageal and Cardiovascular Surgery.* Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, April-May. Sabiston, Sealy, Brown, Young, and Resident Staff

SUR-206(C). *Surgical Aspects of Thoracic Disorders.* Weight: 6. Every term. Young, Sealy, and Brown

SUR-207(C). *Surgical Cardiology.* Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, April-May. Sabiston, Sealy, Brown, Young, and Resident Staff

SUR-211(C). *Alimentary Tract Surgery.* Weight: 3. Term 3: Jan.-March. Postlethwait and Grimson

SUR-213(C). *Homotransplantation of Organs.* Weight: 2. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Stickel, Seigler, and Amos

SUR-215(C). *Surgical Disease of Blood Vessels and Lymphatics.* Weight: 1. Every term except Summer. Silver

SUR-217(C). *Surgery of Trauma.* Weight: 4. Terms 1 or 3: Sept.-Nov., Jan.-March. Shingleton and Peete

SUR-219(C). *Basic General Surgery.* Weight: 7. Every term. Stickel, Dillon, Mauney, Seigler, and Postlethwait

SUR-221(C). *Surgical Specialties.* Weight: 3. Every term. Boyarsky, McCollum, Tindall, and Resident Staff in Surgery

SUR-223(C). *Medical and Surgical Renal Disease.* Weight: 8. Every term. Robinson, Glenn, and respective staffs

SUR-225(C). *Investigative Urology.* Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Boyarsky, Glenn, Dees, Nechay, Labay, Malin, Absher, Semans, and Surgery Staff

SUR-227(C). *Clinical Urologic Surgery.* Weight: 8. Every term. Glenn, Dees, Boyarsky, Anderson and Surgery Staff

SUR-229(C). *Seminar in Urologic Diseases.* Weight: 1. Every term. Glenn, Boyarsky, Anderson, and Dees

SUR-231(C). *Uroradiographic Diagnosis.* Weight: 1. Every term. Lester and Glenn

SUR-233(C). *Basic Neurosurgery Course.* Weight: 1. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Odom, Nashold, Mahaley, and Tindall

SUR-235(C). *Clinical Neurosurgery.* Weight: 8. Every term. Odom, Nashold, Mahaley, and Tindall

SUR-237(C). *Investigative Neurosurgery.* Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Odom, Nashold, Mahaley, and Tindall

SUR-239(C). *Clinical Otolaryngology.* Weight: 6. Every term. Hudson and Kenan

SUR-240(C). *Otolaryngologic Seminar.* Weight: 1. Every Term. Hudson and Kenan

SUR-241(C). *Medical Audiology and Speech Pathology.* Weight: 5. Every term. King and Massengill

SUR-245(C). *Reconstructive Plastic Surgery.* Weight: 6. Every term. Pickrell, Georgiade, and Surgery Staff

SUR-248(C). *Investigative and Clinical Approach to Wound Healing, Including Tissue Preservation, Microbiology of Burns.* Weight: 6. Every term. Georgiade, Pickrell, and Surgery Staff

SUR-249(C). *Speech and Hearing Problems in Children with Clefts of the Lip and Palate.* Weight: 5. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, April-May. Massengill and Staff; Pickrell and Plastic Surgery Staff; Hudson and Otolaryngology Staff

SUR-252(C). *Clinical Anesthesiology II.* Weight: 8. Every term. Dent, Hall, Vartanian, and King

SUR-253(C). *Anesthesiology Research.* Weight: 8. Every term. Hall

SUR-259(C). *General Principles of Orthopaedics.* Weight: 8. Every term. Goldner, Baker, Clippinger, McCollum, Bassett and Surgery Staff

SUR-261(C). *Office and Ambulatory Orthopaedics.* Weight: 8. Every term. Senior Staff at Duke, Watts and Durham V.A. Orthopaedic Services

SUR-263(C). *Orthopaedics in the Community Hospital.* Weight: 8. Every term. Bugg, Glasson, Coonrad, Kapoor and Duke Staff

SUR-265(C). *Cerebral Palsy and Other Musculoskeletal Abnormalities.* Weight: 8. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Staff of Orthopaedic Service, Duke and North Carolina Cerebral Palsy Hospital

SUR-267(C). *Clinical Conference in Cerebral Palsy.* Weight: 4. Terms 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Baker, Goldner, Bassett, and North Carolina Cerebral Palsy Hospital Staff

SUR-269(C). *Upper Extremity Surgery and Reconstruction.* Weight: 8. Every term. Goldner, Clippinger, McCollum, Bassett, and Surgery Staff

SUR-271(C). *Arthritis–Spine and Extremities.* Weight: 8. Every term. McCollum, Goldner, and Medical Rheumatology Staff

SUR-273(C). *Athletic Medicine–Physical Conditioning and Management of Injuries.* Weight: 8. Terms: 1, 2, 3, or 4: Sept.-Nov., Nov.-Jan., Jan.-March, March-May. Baker, Clippinger, Bassett, and Orthopaedic Staff

SUR-275(C). *Electromyography.* Weight: 2. Every term. Clippinger, Goldner, and Orthopaedic Staff

SUR-277(C). *Orthopaedic Research.* Weight: 8. Every term. Orthopaedic Senior Staff and House Staff

SUR-279(C). *Orthopaedic Amputee Program–Clinics, Surgery, and Prosthetics.* Weight: 4. Every term. Goldner, Clippinger, Titus, Horton and other members of Physical Therapy Staff and Prosthetics Department

SUR-281(C). *Introduction to Fractures and Musculoskeletal Trauma* Weight: 3. Every term. Entire Senior Staff at Duke and Watts, Supervision by Goldner (Duke), McCollum (VA), and Bugg (Watts)

SUR-283(C). *Orthopaedics of Infants, Children and Adolescents* Weight: 8. Every term. Goldner, Baker, Clippinger, McCollum, Bassett Stelling, Meyer, Miller, Bugg, Coonrad, Glasson, Kapoor, and Lincoln

ANA-206(B). *Anatomy of Back and Extremities.* Weight: 3. Term 3: Jan.-March. Markee and Bassett

ANA-208(B). *Anatomy of the Trunk.* Weight: 2. Term 3: Jan.-March. Markee and Duke

ANA-216(B). *Anatomy of the Head.* Weight: 2. Term 4: April-May. Markee and Everett

ANA-256(B). *Surgical Neuroanatomy.* Weight: 1. Terms 2 or 3: Nov.-Jan., April-May. Mahaley

CTP-209(C). *Survey of Cancer, Clinical and Basic.* Weight: 8. Terms 1 or 3: Sept.-Nov., Jan.-March. Shingleton, Laszlo, and Porter



Health Related Professions

Cytotechnology

Assistant Professor W. Johnston, *Director*; Assistant Professor M. Vazquez, *Assistant Director*; Instructor J. Amatulli; and Staff of Department of Pathology as required in special phases of instruction.

The School of Cytotechnology at the Department of Pathology offers a twelve-month course in technical and diagnostic aspects of exfoliative cytology to qualified individuals. The minimum qualifications are twelve semester hours of Biology, which may include Anatomy, Histology, Zoology, Botany, and Physiology, and at least two years of college. The common practice is to admit individuals with B.S. or A.B. degrees and only in exceptional cases applicants with incomplete college requirements will be considered.

The program consists of two parts. Part I—six months, primarily theoretical and practical exercise in the techniques of exfoliative cytology and interpretation of the clinical material. Part II—six months practical training in all aspects of exfoliative cytology in participating in the routine work of the laboratory. One class is accepted annually on November 1. Graduates of this course are awarded a certificate and are eligible to take the certifying examinations given by the Registry of Medical Technologists of the American Society of Clinical Pathologists. There is no tuition fee. Additional information about the School of Cytotechnology and ap-

plications for admission may be obtained from William Johnston, M.D., Department of Pathology, Duke University Medical Center, Durham, North Carolina.

Dietetics

Director D. Tate; Educational Director M. McLachlan; Assistant Director M. Pate; Administrative Dietitians M. Solomon, B. Sowter; Administrative and Therapeutic Dietitians N. Curtis, C. Conely; Unit Administration Dietitians M. J. Crawford, A. Meredith; Clinic Dietitian C. Wason; Research Dietitians V. Irons, C. Peters; Maternal and Child Health Dietitian C. Fluke; Medical Dietitians A. Sites, R. Fox, M. Ramsey, D. Jones; Teaching Dietitian J. Graham; Unit Administration Project Dietitians T. Burgess, F. Floore

A Dietetic Internship Program is offered to men and women who have graduated from college in Food and Nutrition or Institutional Administration and meet the course requirements of the American Dietetic Association. The twelve months of post-baccalaureate work consists of classroom instruction and clinical experience in administration, therapeutics, research, and education. After the successful completion of the Dietetic Internship, certificates and membership in the American Dietetic Association are awarded. For further information write:

Department of Dietetics
Duke University Medical Center
Durham, North Carolina

Hospital Administration

Professor C. Frenzel, *Director*; Assistant Professor D. S. Smith, *Coordinator*; Associate Professor L. Swanson; Clinical Associate M. Pickens

Clinical Lecturer E. C. Bryson; *Instructors* R. Jennings, J. J. Hayes, C. Cobb; *Clinical Instructors* J. Felts, G. Harris, H. Rowland, B. McCall; *Clinical Preceptors* W. Andrews, J. Barnes, H. Bettis, T. Howerton, J. Moulton, J. Pyne, M. Yount

Graduate education for hospital administration is offered through a 24-month program conducted jointly by the Graduate School of Arts and Sciences and the Medical Center. The Program consists of selected graduate courses in Economics, Political Science, Sociology, and Hospital Administration, and of a twelve-month administrative residency in hos-

pitals and other health agencies. The Master of Hospital Administration degree is awarded to those who successfully complete the Program.

Detailed information may be obtained from:

Graduate Program in Hospital Administration
Box 3018
Duke University Medical Center
Durham, North Carolina

Medical Technology

Professor T. Kinney, *Director*; Professor R. Thiers; Associate Professors J. Goodrich, A. Musser, *Associate Director* S. Osterhout; Assistant Professors H. Silberman, G. Spooner; Associate C. Mauney; Instructor R. Habig; *Teaching Supervisor and Registrar* M. Britt; *Assistant Registrar and Instructor* L. Garris; Instructor A. Proctor
Clinical Instructors L. Adkins, J. Carr, C. Harrison, N. Lester, M. Marshall, P. Pickett, D. Silva, R. Smith, A. Walker, R. Wildermann, I. Wyatt

The School of Medical Technology offers a twelve-month internship program of instruction and rotation through the clinical laboratories of the Duke University Medical Center and the Veterans Administration Hospital.

The internship program is open to men and women who have either a baccalaureate degree or a minimum of three years of college (in an accredited college or university) with plans for receiving such a degree from the preparatory college upon completion of the internship program. Applicants must have successfully completed at least 90 semester (135 quarters) hours which include:

Chemistry—minimum of 16 semester hours (24 quarter hours) which includes one full year of general college Chemistry. The remaining courses may be selected from qualitative, quantitative, organic, physical, or biochemistry. (One semester of quantitative analysis is strongly recommended.) All courses must include lectures and laboratories.

Biological Sciences—minimum of 16 semester hours (24 quarter hours). All required biological sciences must include lecture and laboratories. Courses may be selected from general Biology, Zoology, Botany, Physiology, Comparative Anatomy, Parasitology, Histology, Histologic Technique, Genetics, or Bacteriology. (Bacteriology is strongly recommended.)

Mathematics—minimum of 3 semester hours.

Courses in Physics are recommended but not required. Electives may be selected from English, social sciences, arts, and Humanities.

Courses taught during the Internship include Clinical Biochemistry,

Clinical Microscopy, Radioisotope Theory, Microbiology (Bacteriology, Mycology, Virology), Immunohematology, Parasitology, Introduction to Clinical Pathology, Serologic Techniques and Histologic Techniques. (Classes begin on July 1.)

Students are given a certificate upon completion of the Internship program and are qualified for examination and certification by the Registry of Medical Technologists of the American Society of Clinical Pathologists. They are eligible for membership in the American Society of Medical Technologists. This program is approved by the Council on Medical Education and Hospitals of the American Medical Association.

A $25.00 non-refundable registration fee is required upon acceptance in the program. This is applied towards the $50.00 breakage fee which is payable upon entrance. Students will be furnished rooms in dormitories and will receive a grant-in-aid of $100 a month. Students are required to participate in the Hospital Insurance plan, furnish their own white uniforms, white shoes, and meals. Laundry of uniforms is furnished by the Medical Center. Students can expect to spend $50 to $75 for books during the year.

For further information and/or application blanks, write to: Registrar, School of Medical Technology, Department of Pathology, Duke University Medical Center, Durham, North Carolina 27706

Nuclear Medicine

Professor R. Lester, *Chairman of the Department of Radiology*; Associate Professor J. Goodrich, *Director of Nuclear Medicine Division*; Professors R. Reeves, G. Baylin; Associate Professors P. Cavanaugh, A. Sanders; Assistant Professor R. Gorten; Associate A. Wyrick

Instructor K. Sharpe; *Radiological Safety Officer* C. Knight

The Division of Nuclear Medicine offers thirteen-week and twelve-month programs of instruction and laboratory training for clinical radioisotope technologists. This training includes experience by rotation through the Radiation Safety Office and the following Divisions of the Department of Radiology: Nuclear Medicine, Radiation Therapy, and Radiobiology.

An applicant for admission must be a graduate of an approved high school and registered by the American Society of Radiologic Technologists or the Registry of Medical Technologists (ASCP). Applicants having equivalent training and experience will be considered on an individual basis. A registration fee of $100 is required, upon acceptance, and is payable to the Division of Nuclear Medicine, Duke University. Books and supplies are about $25.00. No living quarters are provided for para-

medical students by the University. Students live in town at their own expense. Completion of the one year program qualifies the participant for examination leading to the registry of American Society of Radiologic Technologists. Participants in the thirteen-week course may qualify for this registry by pursuing on-the-job isotope technology in any institution having a clinical radioisotope laboratory. For further information address inquiries to:

Mrs. Kathryn Sharpe, Instructor in Radiology
(Division of Nuclear Medicine)
Box 3166 Duke University Medical Center
Durham, North Carolina 27706

Nurse Anesthesia

Professor Sara J. Dent, *Chief of Division of Anesthesiology*; Instructor M. Campbell, *Director of School of Anesthesia for Nurses*; M. Gardner, *Educational Program Director*; Assistant Nurse Anesthetists L. Glenn, F. Perry, A. Truitt, M. Haigler, A. Moody, G. Cowan, F. Ivey, R. Johnson, J. Ralph, G. O'Briant, N. Nelms, V. Rhew

The twenty-four month course in anesthesia is available to well qualified registered nurses. Instruction embraces the theoretical aspects and clinical application of all drugs and techniques in accepted usage. The program is divided into quarters. The major part of the basic theoretical instruction is given during the first three quarters. After a preclinical period of eight weeks, clinical practice runs parallel with the theoretical program. One class is accepted annually and enrolled in January. All appointments of the current year are made by September 1 of the preceding year. Graduates of this course are eligible to take the qualifying examination for membership in the American Association of Nurse Anesthetists. Tuition is $150.00. Additional information concerning nurse anesthesia may be obtained from Mary B. Campbell, C.R.N.A., P.O. Box 3204, Duke University Medical Center, Durham, North Carolina.

Physical Therapy

Associate Professor H. Kaiser, *Director*; Associate R. Federchuck, *Supervisor of Treatment Division*; G. Hutcheson, *Coordinator of Extension Services*; C. Thompson, *Secretary-Recorder*; F. Gehweiler, *Educational Coordinator*; B. Baker, *Assistant Supervisor*; Associates E. Blumenthal, E. Villanueva

Instructors: J. Barr, N. Greenwald, K. Torgerson; Assistants: B. Busch, B. Denny, C. A. Gervin, M. Powers, J. Roe

The curriculum in Physical Therapy is conducted under the joint auspices of the Graduate School of Arts and Sciences and the Medical Center.

Two programs are offered. One leads to a Certificate in Physical Therapy and a Master of Arts degree and the other to a certificate. Graduates of either program are eligible for state and national licensing and registration examinations and membership in the American Physical Therapy Association.

Prerequisites for both programs are basic courses in Psychology, Mathematics through beginning Calculus, and two years of laboratory courses in college Chemistry, one year of laboratory courses in Zoology and a one year laboratory course in Physics covering the principles of heat, mechanics, and electricity plus satisfactory scores on the Graduate Record Examination. Those wishing to enter the program leading to a Master of Arts degree must also meet the requirements of their selected major as well as have successfully completed a course in Calculus and additional Chemistry courses. Those seeking admission to the program leading to a Certificate in Physical Therapy must have completed a baccalaureate degree or plan to receive such a degree from the preparatory college upon completion of the physical therapy program.

The program leading to a Certificate in Physical Therapy and a Master of Arts degree is a two year program. In the first year the necessary credit courses may be selected from the following: Anatomy M201, 6 units; M202, 3 units; M203, 4 units; M205, 2 units; M313-314, 2 units; Physiology M261-262, 8 units; M279, 1 unit; M370, 2 units; M372, 3 units; Psychology S232, 3 units; Biochemistry 201, 6 units; Zoology 252, 4 units; 245, 3 or 4 units; 271, 4 units. In the second year, in addition to the thesis, the physical therapy procedure courses listed in the Certificate Program and practicum may be completed. Upon completion of the two year program, a Certificate in Physical Therapy and a Master of Arts degree are awarded.

The program leading to a Certificate in Physical Therapy may be completed in fifteen months. The curriculum includes: basic science courses, kinesiology, Pathology, Physical Therapy, and rehabilitation as related to the medical and surgical specialties, administration, ethics, physical therapy procedure courses, and sixteen weeks of clinical experience at the Duke University Medical Center, affiliated hospitals and state and county public health departments.

Tuition and health fees for the program leading to a Certificate in Physical Therapy and a Master of Arts degree are approximately $2,000. The total cost for the program leading to a Certificate in Physical Therapy is approximately $1,600. Scholarship and loan funds are available.

For further information, write to the Director of Physical Therapy, Box 3247, Duke University Medical Center, Durham, North Carolina, 27706.

Prosthetic and Orthopaedic Appliances

Assistant Professor B. Titus, *Director*; Assistant Prosthetist and Orthotist R. Gooch; Assistant Orthotist P. Ray

The function of this Department is to produce prosthesis and orthopaedic appliances for the medical profession. Facilities for individual training in specific techniques or methods employed by this Department are available. Those who complete four years' training are eligible to take the examination of American Board of Certification.

Radiologic Technology

Professor R. Lester, *Chairman of the Department of Radiology*; Assistant Professor J. Cahoon, *Director of the School of Radiologic Technology*; Professors R. Reeves, G. Baylin; Associate Professors W. Barry, M. Capp, J. Goree, B. Worde, P. Cavanaugh; Assistant Professors M. Raben, A. McCrae, R. Rice

Instructor J. Miller; *Technical Instructors* M. Lockhart, E. Porter, G. Cheshire, T. Christianberry, V. Moody, M. Ahbe; *Radiological Safety Officer* C. Knight

The School of Radiologic Technology offers a two year training program of instruction and practical training in the Department of Radiology.

Students are admitted on September 1 of each year for two years of intensive training in the academic and practical aspects of Radiologic Technology.

During the second year the students are paid a stipend of $100.00 per month. Upon completion of the course, the students are required to take the National Board Examinations in Radiologic Technology sponsored by the American Registry of Radiologic Technologists before a diploma is awarded. The school is approved by the Council on Education of the American Medical Association, the American College of Radiology, the American Registry of Radiologic Technologists, and the American Society of Radiologic Technologists.

Candidates for admission must be graduates of approved high schools and rank in the *upper third* of their class. Candidates with college credits are given preference. Official transcripts of high school and/or college grades, a list of three references, and a recent photograph must be included with the application before being considered by the Committee on Admissions. It is recommended that applicants be at least 19 years and not more than 30 years of age at the time of enrollment.

A tuition of $100.00 payable to the Treasurer of Duke University is

required and is payable by August 15. There is a $2.00 application fee payable to the School of Radiologic Technology. Application fee and tuition are non-refundable. Books, supplies, and uniforms run about $175.00. Laundry of uniforms is furnished by the Medical Center. After successful completion of the first year, the student is paid a monthly stipend of $100.00.

At the end of six months, if the student's work has been unsatisfactory or shows inaptitude for technical work in radiologic technology, he is advised to withdraw from the course.

No living quarters are provided for paramedical students by the University and the students in Radiologic Technology live in town at their own expense. For further information or application blanks, write to John B. Cahoon, R. T. Director, School of Radiologic Technology, Duke University Medical Center, Durham, North Carolina.

Veterinary Medicine

Associate Professor J. LeMay, *Chairman*; Associate B. Sherwood; Assistant R. Castellanos

The function of this Department is to facilitate the various teaching and research programs that require laboratory animals. Veterinary medical consultation is provided for research projects in which experiments are conducted on animals. Assistance is made available in selecting the most suitable species or strain of laboratory animal to use in a given study. In addition, animals are procured, quarantined, and appropriately conditioned in order to provide a highly reliable biological tool. A wide variety of technical services are carried on, such as providing whole blood of a variety of species, collecting biological specimens, providing clinical pathologic examinations, preparing animals for surgery, postsurgical care, and maintenance of the animal colonies.

The Department collaborates with those departments of the School of Medicine that utilize laboratory animals in their teaching programs. Various disease states are experimentally produced in animals for student observation and study, and techniques for collecting biological specimens for additional study are demonstrated. Aid is given in setting up and carrying out these demonstrations and studies on animals.

The Veterinary medical staff teaches an introductory course in animal experimentation which is a required couse for physician's assistant trainees. Plans are under way to make this course available to others and offer additional courses of study.

Research programs on some of the spontaneous diseases of laboratory animals are carried out by the staff both independently and with other Medical Center investigators.

Inhalation Therapy

The School of Inhalation Therapy is under the medical direction of the Division of Anesthesiology. It is accredited by the Council on Medical Education of the American Medical Association.

An eighteen-month course is offered which combines didactic instruction and on-the-job training. Approximately ten students are enrolled in this school each year. Graduate students are qualified to participate in National Board Exams. Associate degree programs are under development and will be offered by 1970.

All applicants must be high school graduates. Previous medical experience is desirable. A stipend commensurate with background and experience is offered. For detailed information, write to Houston R. Anderson, Director, School of Inhalation Therapy, Box 3094, Duke University Medical Center, Durham, North Carolina 27706.

Physician's Assistant Program

Professor E. H. Estes, *Chairman*; D. R. Howard, *Medical Director*; James C. Mau, *Administrative Director*; Associate Professors W. O. Dobbins, J. A. Kylstra, J. C. LeMay, H. A. Saltzman; Assistant Professor R. F. Klein

Instructors F. Dalton, S. Fourtney, J. Harper, T. Huff, C. Mansbach, H. Heick, B. Sherwood, R. Neelon, C. Roe, K. Andreoli, N. Ashe

The Physician's Assistant Program, initiated in the Fall of 1965, is designed to develop a new category of personnel within the structure of the health field who will function under the direction of physicians to assist them in their clinical and/or research endeavors.

It is a twenty-four month program divided into preclinical and clinical categories. The preclinical portion includes anatomy, physiology, animal dissection and surgery, biochemistry, metabolism, pharmacology, medical electronics, clinical medicine, pathophysiology, physical diagnosis and community health medicine. The clinical rotations include supervised exercise in defined areas or disciplines in the Medical Center and surrounding hospitals and clinics such as the Cardiovascular Laboratory, Endocrinology, Urology, V.A. Hospital admitting office and Lincoln Hospital.

Candidates for admission must be high school graduates and have prior experience in the health field in a capacity such as military corpsman, Licensed Practical Nurse, etc. A stipend of $200 per month for the first 12 months, and $250 for the second 12 months, is provided. For further information write to: Administrative Director, Physician's Assistant Program, P. O. Box 3230, Duke University Medical Center, Durham, North Carolina 27706.

The School of Nursing

Table of Contents

General Information 1

Undergraduate Course of Study and Requirements for Degree 4
- The Bachelor of Science in Nursing 4
- Requirements for Degree 5

Resources for Study 7
- Instructional Facilities 7
- Duke Hospital 7
- Libraries 8

Student Life: The Undergraduate Student 10
- Living Accommodations 10
- Services Available 11
- Student Activities 12
- Prizes and Awards 14

Undergraduate Admission 16
- Requirements for Admission 16

Undergraduate Program: Financial Information 20
- Fees and Expenses 20
- Student Aid 24

Undergraduate Registration and Regulations 28
- Registration 28
- Academic Regulations 29
- Nonacademic Regulations 34

Undergraduate Courses of Instruction 37

The Master's Program in Nursing 39

General Information

Philosophy of the School of Nursing

The School of Nursing functions within the philosophy of Duke University. This philosophy is epitomized by its motto, *Eruditio et Religio*, which "reflects a fundamental faith in the union of knowledge and religion, the advancement of learning, the defense of scholarship, the love of freedom and truth, a spirit of tolerance, and a rendering of the greatest service to the individual, the state, the nation and the church. Through changing generations of students, the objective has been to encourage each individual to achieve to the extent of his capacities an understanding and appreciation of the world in which he lives, his relationship to it, his opportunities, and his responsibilities."

The faculty of the School of Nursing ascribes to the concept that a professional nurse is a person who has acquired the specialized knowledge of nursing, who has attained abilities useful in practice of nursing, and who has developed attitudes appropriate to the profession of nursing.

The faculty conceives professional nursing to be a service which contributes to the health and well being of people. Professional nursing practice is dealing with human beings under stress, frequently over long periods of time; providing comfort and support in times of pain, anxiety, loneliness, and helplessness; perceiving, evaluating, and intervening appropriately; administering medications and treatments; using clinical nursing judgment in establishing, maintaining, and/or modifying a plan of

care; and knowing when and how to use existing and potential resources to help patients toward recovery and adjustment. Professional nursing practice is sharing responsibility for the health and welfare of all those in the community; participating in programs designed to prevent illness and maintain health; coordinating professional and technical services in the best interest of patient care; and supervising, teaching, and directing all those who give nursing care. Professional nursing practice requires constant evaluation; asks questions and seeks answers which will add to the body of nursing theories; and transmits and uses the theories, as well as other research findings, to improve services to patients and service programs to people. Professional nursing practice requires knowledge and skill of high order and provides opportunities for personal and professional fulfillment.

The faculty believes that the primary aim of nursing education is to provide an environment in which the student can develop self-discipline, intellectual curiosity, the ability to think critically, and acquire the knowledge necessary for practice. The faculty believes that learning is manifested by change of behavior, resulting from experience; that an atmosphere for learning is one in which systematic direction and guidance of the learner is offered in a climate which encourages self-direction and creativity; that professional nurse education implies that the student who seeks admission to the school comes with the intent of practicing professional nursing; and, that the curriculum offered aids the student in realizing this intent and in stimulating the desire for continued professional growth.

The School of Nursing is committed to promoting human health and welfare through providing foundations for knowledgeable nursing services and is committed to contributing to the attainment of the University's aims of teaching, research, and public service.

The school aims to prepare its graduates to function as practitioners of professional nursing in roles most appropriate to the level of their preparation. The school aims to provide its students with an educational background which will serve as a basis for advanced study in nursing, and for continued personal and professional growth.

History

The School of Nursing of Duke University was established in association with the School of Medicine and Duke Hospital. The first class of students was admitted in January, 1931. In 1953, the School of Nursing was incorporated into the Division of Health Affairs in the University structure. When established, the three-year curriculum leading to the Diploma in Nursing was planned to prepare young women to meet com-

munity nursing needs; students who completed two years of acceptable college work were awarded a Bachelor of Science degree in Nursing in addition to the Diploma in Nursing. Trends in nursing created a demand for a four-year program leading to the degree of Bachelor of Science in Nursing, and in 1953, the University Board of Trustees approved such a program. The Master of Science in Nursing Degree was authorized in 1956.

Graduates of Duke University School of Nursing have served their communities in North Carolina and in other states; they have participated in their professional organizations on a national, state, and local level. During World War II, graduates of this school staffed the 65th General Hospital of the Duke University Medical Unit.

Relationship to the University

As a part of the University community, the School of Nursing serves its students as the focus of a total educational experience that only a major university can provide. It shares the same campus with Trinity College, College of Engineering, the Graduate School of Arts and Sciences, the Divinity School, and the Schools of Law, Medicine, and Forestry, and Duke Medical Center. The facilities for library, laboratory, and field work, and the many activities—religious, intellectual, cultural, and athletic—form part of the environment which contributes to the development of students in nursing. Thus, the student in nursing may enjoy simultaneously the broad facilities and challenges of a University and the life and atmosphere of a professional school.

Membership and Accreditation

Duke University, which incorporates the School of Nursing with all of the other schools of the University, is a member of the Association of American Colleges and is accredited by the Southern Association of Colleges and Secondary Schools.

The generic program leading to the degree of Bachelor of Science in Nursing is accredited by the National League for Nursing and the North Carolina Board of Nursing.

The School is a member of the Department of Baccalaureate and Higher Degree Programs of the National League for Nursing.

Undergraduate Course of Study and Requirements for Degree

The Bachelor of Science in Nursing

The School of Nursing offers a program which can be completed in four academic years. At the completion of the program, the student receives the degree of Bachelor of Science in Nursing. The graduate is then eligible to apply for examination for licensure to practice nursing in any state.

The curriculum is designed to assist students to acquire (1) an understanding and appreciation of their changing world, their relationships to it and as well as their opportunities and responsibilities within it; (2) the understanding, knowledge, and skills essential in the practice of nursing; and (3) the foundations which will assist them to grow professionally and to contribute through the profession to society.

The major focus of the first and second years is on liberal arts; in the third and fourth years it is on nursing. Within the nursing major, the student is offered a wide variety of experiences with patients, families, and community programs.

Requirements for Degree

The requirements for the degree of Bachelor of Science in Nursing are based on the principle that the student will derive the maximum benefit if the program includes a broad distribution of studies among representative fields. For graduation from the baccalaureate program, in addition to completion of an approved curriculum, the student must meet the following minimum requirements: an overall q.p.r. of 2.00 in the nursing major and a total q.p.r. of 1.90.

To qualify for the degree of Bachelor of Science in Nursing, the following course work or equivalent must be completed. The uniform course requirements and electives are selected from the following areas of study: English, Foreign Languages, Social Science and History, Natural Science, Humanities, Religion, Mathematics, Physical Education, Nursing.

Program of Study for Students Enrolled Prior to September 1968

Second Year

	s.h.
Nursing 51 (Introduction to Biochemistry)	3
Nursing 52 (Introduction of Human Anatomy and Physiology)	4
Nursing 53 Normal and Therapeutic Nutrition	3
Nursing 91-92 Fundamentals of Nursing	12
Sociology 91 General Sociology	3
Elective (Sociology and Psychology)	6
Elective (Religion, Art, Music, Philosophy or Literature)	6
Total	37

Third Year

		s.h.
Nursing 120	Pediatric Nursing	6
Nursing 130	Obstetric Nursing	6
Nursing 141	Medical-Surgical Nursing Theory	5
Nursing 142	Medical-Surgical Nursing Practicum	4
Nursing 155	Social Forces and Community Health	3
Sociology 150	The Family	3
Psychology 116	Psychology of Adjustment	3
	Total	30

Fourth Year

		s.h.
Nursing 160	Social Foundation of Nursing	3
Nursing 170	Psychiatric Nursing	6

Nursing 180	Public Health Sciences	3
Nursing 181	Public Health Nursing	6
Nursing 191	Nursing Team Leadership and Intensive Nursing Care	6
	Total	24



Resources for Study

Instructional Facilities

The facilities for instruction include the facilities available in the undergraduate, professional, and graduate schools and colleges of Duke University and the clinical facilities of Duke Hospital, the North Carolina Cerebral Palsy Hospital, the Veteran's Administration Hospital, and the Durham Health Department and the John Umstead Hospital.

In a wing of Hanes House are located the administrative offices of the School of Nursing, a large classroom seating 100 persons and equipped with audio-visual aids; a small classroom seating 50 persons and equipped with a screen and movie projector, a nursing laboratory with equipment for nursing practice for students, and conference rooms.

Duke Hospital

Duke Hospital, an integral part of the Medical Center, is a 728-bed, 30-bassinet general hospital which performs the concurrent functions of patient care and professional education. It admits over 20,000 patients a year, and maintains comprehensive diagnostic and treatment facilities for their care.

Different levels of patient care are provided by a minimal care unit and intensive care facilities in addition to conventional nursing units.

Private, semi-private, and ward accommodations are available. Approximate daily patient census by service is as follows: Surgery (including Urology, Otolaryngology, Ophthalmology, and Orthopaedics), 332; Medicine (including Dermatology and Neurology), 231; Pediatrics, 78; Psychiatry, 52; and Obstetrics-Gynecology, 45. Surgical facilities include eighteen operating rooms and a recovery room; over 15,000 surgical procedures are performed annually. Two obstetrical delivery rooms are maintained.

Outpatient services include a public clinic which totals some 122,000 visits a year, a private diagnostic clinic of comparable size, and an active emergency service. All of the hospital components are located within a single building. Close working relationships between Duke Hospital and outside health agencies contribute to continued care.

Duke Hospital is approved for internship and residency training by the Council on Medical Education and Hospitals of the American Medical Association, and conducts an active educational program involving some 280 house staff members. The hospital is fully accredited by the Joint Commission on Accreditation of Hospitals.

Libraries

Nursing Library

A reference library of 6,500 books and periodicals is located in Hanes House for the use of students majoring in nursing. There are available approximately one hundred current periodicals on nursing and allied fields, as well as *The Cumulative Index to Nursing Literature, Index Medicus, International Nursing Index,* and *Hospital Literature.*

The library is open 98 hours a week with reference assistance available. Students may freely use other libraries on campus, both general and professional.

University Library

The University library, among the first seventeen university libraries in the country, contains 1,863,000 volumes and 4,000,000 manuscripts. About 80,000 volumes are added annually. Separate departmental and professional school libraries provide notable collections in the several disciplines.

More detailed information may be obtained in a *Student's Guide to the General Library*, available on request to the Librarian of the University.

Medical School Library

The Medical Center Library, located in the Davison Building, attempts to provide all services and collections necessary to further educational

research and clinical activities in the medical field. Extensive reference and bibliographical service is provided. The collection contains over 80,000 volumes and about 1,600 current periodicals.

The Trent Collection in the history of medicine is an unusually fine one, rich in manuscripts and rare books, and provides the opportunity for study and research as well as casual reading in the field.



Student Life: The Undergraduate Student

Living Accommodations

Housing

Hanes House and Hanes House Annex provide residential accommodations for School of Nursing students. Counselors, who are members of the Dean's staff, live in the respective houses. The counselors, with the cooperation of the Student Government Executive Council, are responsible for the administration of the houses.

Undergraduate students are required to live in the residence houses unless they are married or are living with parents or relatives. Any exception must be approved by the Dean. Rooms are rented for the academic year. All payments for room expenses must be made in advance for a semester and may be made in full for the entire year. After the day of registration for a semester, no refund of room rent will be made except for involuntary withdrawal to enter the armed services.

Occupants are expected to abide by the regulations governing the occupancy of rooms as they appear in the student handbook.

Food Services

The dining facilities available to students in the School of Nursing include the Medical Center and the East and West Campus Cafeterias for upperclass students; the West Campus and Graduate Center Cafeterias and the East Campus Union for freshmen and sophomore students. Sophomore and freshman students may not board at places other than those specified. A student must pay board during her first four regular school sessions and during the summer session. This charge is payable no later than the date of the beginning of each semester and of the beginning of summer session. Students will not be entitled to a refund on board after the dates of the Fall or Spring mid-semester. (See Calendar.) Junior and senior students will not be required to pay Board fees. These students may purchase meals at any of the dining facilities described above.

Services Available

Medical Care

Students enrolled in the regular program of studies are eligible for the services offered under the health program of the school.

Complete medical facilities are available to students at the Duke Medical Center under the health program. With the necessary exceptions noted below, this type of care is furnished at a minimum expense to regularly enrolled students. The cost is included in the general fee each semester and in the fees charged for the Summer Session terms.

Physical Examination. Upon admission each student receives a complete physical examination including a chest x-ray. Thereafter, the physical examination is repeated annually.

Health Office. The health office in Hanes House, under the direction of a physician, is maintained for the students in the school. Advice, treatment, and examination are available to students during regularly scheduled hours. Consultations with Duke Medical Center staff specialists are arranged through the health office as necessary; arrangements for drugs, dressings, laboratory texts, and x-rays are made as needed.

Hospitalization. A student requiring hospitalization is admitted to Duke Hospital. Admission is arranged through the health office. Medical and surgical care is under the supervision of a senior physician or surgeon. Hospital care includes staff nursing, drugs, dressings, laboratory tests, and x-rays as needed. Hospital care is limited to thirty days. Non-board paying students are charged board while in hospital or infirmary (juniors, seniors).

If the student is covered by an insurance plan which provides for

hospitalization, medical or surgical benefits, the coverage should be applied to the cost of care.

Exceptions. The health program does not cover chronic or pre-existing conditions, private duty nursing, refraction of eyes, treatment of teeth, hernias, pilonidal cysts, chronic skin conditions, endocrine disturbances, elective surgery, braces or any orthopaedic appliance, accidents or illness occurring during vacation or while off the campus. Blood used for transfusions must be paid for or replaced.

Student Health Insurance. A special commercial policy available only to regularly enrolled Duke students can be secured to furnish complementary protection, if desired. The insurance excludes any coverage for accident or illness cared for under the health program; insurance protection is furnished for off the campus and during vacations.

Student Mental Health Clinic. Staffed by members of the Duke Medical Center's Department of Psychiatry, the Student Mental Health Clinic provides psychiatric consultation without charge to all undergraduate women registered full time in the School of Nursing and The Women's College. While special arrangements are made for extensive or prolonged therapy, this service is not included in the health program.

University Counseling Center

The University maintains a Counseling Center which provides a centralized program of educational, vocational, and personal counseling for students. In addition, the Center administers special group testing programs for University schools and departments and serves as the local testing center for a wide variety of national testing programs. The Center also carries on programs of research in the field of measurement and counseling.

Appointments Office

A service open to all Duke students, the Appointments Office provides permanent and summer job information for students, makes available recommendations of students to prospective employers, and arranges for initial job interviews for students and prospective employers. Any student who wishes this service can register at the Appointments Office in 214 Flowers.

Student Activities

Religious Life

"*Eruditio et Religio*," the motto emblazoned on the seal of the University, proclaims belief in the essential union of knowledge and religion in the educational process. The Gothic Chapel stands at the center of the

campus, an inspiring symbol of the place of religion in the well-balanced life. The Chapel program encourages the cultivation of the moral and spiritual life of students.

Opportunities are provided through the Chapel and its related activities to translate worship into effective Christian living. Denominational, interdenominational, and interfaith loyalties are emphasized. Protestant, Roman Catholic, and Jewish students are organized in their respective groups, each having a denominational chaplain or adviser. The University Religious Council and the University Christian Movement promote the ecumenical religious life in its many facets.

Additional opportunities for the enrichment of the student's religious life are offered in organ and carillon recitals, in choral concerts, and in other special services. Some students, at their own discretion, participate actively in the program of the downtown churches of their choice.

Student Organizations

Student organizations provide for participation in many broad interest areas such as student government, student union, music, drama, service, publications, honorary and professional groups, and social activities.

Student Government. Every undergraduate student at Duke University is a member of the Associated Students of Duke University (ASDU), the unitary student government organization formed in 1967. While the president, secretary, and treasurer are elected from the entire student membership, each of the undergraduate schools, including the School of Nursing, elects a vice president to the executive body of ASDU. The Legislature is composed of elected legislators from each college on the basis of population—the School of Nursing having four. ASDU concerns itself with issues which are of paramount concern to the entire University such as academic reform, student rights, and student services.

The Student Government Association of the Duke University School of Nursing is composed of all students in the undergraduate baccalaureate program, and is coordinated by elected students serving on the Executive Council. Each student has a voice in the consideration of social and academic matters and, through membership and holding offices, has the opportunity to serve her fellow students and the University. Because of the high regard for individual opinion and the democratic nature of decision-making, the student government fosters a sense of individuality, increases skills in group work, and promotes responsibility in developing and carrying out the policies of the School of Nursing and the University.

Student Union. The University Student Union through its board of governors and its six committees—Drama, Major Attractions, Speakers, Performing Arts, Publicity, and Visual Arts—provides the University with a broad program of cultural, educational, and social activities. All undergraduates are members of the Union and are encouraged to participate in its varied committee work.

Musical and Drama Groups. There are a variety of musical organizations made up of students throughout the University. They include the Chapel Choir, Women's Glee Club and Chorus, Chancel Singers, Symphony Orchestra, Concert Band, and Marching Band. The drama groups include the Duke Players and the Wesley Players, both of which present a number of plays and readings each year. Music and drama are combined in Hoof 'n Horn, an organization which annually produces a musical comedy which is cast, directed, and acted by students from the entire University.

Publications. The students of Duke University publish a newspaper, a yearbook, and several magazines. Within the School of Nursing, the Publications Committee of the Student Government Association is responsible for *The Charge*, a handbook; *Beaux and Bows*, an orientation book for freshmen; and *Nurses Notes*, a monthly newspaper.

Santa Filomena. Santa Filomena is a senior honorary society founded for the purpose of recognizing achievement and promoting leadership among students in the School of Nursing. New members are selected from the junior class on the basis of scholarship, superior nursing ability, and service to the School of Nursing.

The North Carolina State Student Nurses Association. As members of the Duke University School of Nursing, students are members of the National Student Nurses' Association through membership in the North Carolina State Student Nurses' Association. Such membership facilitates social relationships and an interchange of ideas with students of various programs of nursing education throughout the state and nation. Participation in the program of the district, state, and national association provides students with the opportunity to work with and learn more about their colleagues of the future.

Sororities. Eleven national sororities and one local sorority have chapters on the University campus. Although there are no chapter houses, the programs of the sororities are carried on within sections of various buildings on East Campus. Undergraduate women from the Woman's College and the School of Nursing have the opportunity to participate in sororities if they elect to do so.

Prizes and Awards

Duke University School of Nursing Alumnae Award

The Duke University School of Nursing Alumnae Award is presented to the student in the graduating class who has demonstrated outstanding leadership, scholarship, and nursing skill.

The Moseley Award

The Moseley Award of $25.00 is given to the student in the senior class who has shown the most skill in the art of nursing throughout her program in the School of Nursing.



Undergraduate Admission

New students are admitted for the academic year at the opening of school in the fall.

Candidates may qualify for admission as members of the freshman class or as students with advanced standing. Since the enrollment is limited, the Committee on Admissions selects students who, in its judgment, are best qualified to benefit from the educational advantages which the school offers. Selection is based on the academic record of the candidate, on test scores, and on satisfactory evidence of good character and general fitness for college life at Duke. A visit to the campus for a personal interview with members of the faculty is of material benefit to the candidate and to the Committee.

Requirements for Admission

Admission to the Freshman Class

A candidate for admission to the freshman class must present at least fifteen acceptable units of secondary school credit. A minimum of twelve units must be in college preparatory subjects, but it is recommended that fifteen be offered. Subjects classified as college preparatory are English, foreign language, history and social studies, mathematics (algebra and geometry), and sciences.

Prospective students are urged to broaden their reading outside of class

during their senior year and to make the acquaintance of books and magazines that do not form part of the subject matter of their courses. At the same time, they should take every opportunity to increase their competence in writing. Those who cannot write, simple, clear, grammatical English prose will be progressively at a serious disadvantage in the competition for admission and also in the general work of the freshman year. Careful attention to correctness in English in correspondence and on application blanks cannot be too seriously stressed for candidates for admission.

Applicants are advised to have their scores on the Scholastic Aptitude Tests and the scores on three achievement tests of the College Entrance Examination Board submitted to the Office of Admissions. Graduate nurse applicants should submit one reference from a faculty member of the School of Nursing from which they were graduated and if applicable, from an employer. Interviews with members of the Duke University School of Nursing faculty are desirable and are encouraged.

Evidence of good health will be requested after the applicant is considered for acceptance. Final acceptance will be contingent on a complete physical examination during the week of Orientation. This examination also includes a chest x-ray, blood and urine studies, and skin tests.

Prerequisites

All applicants for admission to the School of Nursing must present at least fifteen acceptable units of secondary school credit. A unit of credit is allowed for a course of study pursued throughout an academic year at an accredited secondary school, if the course has been completed satisfactorily.

1. Twelve units must be included as follows:
   (a) English—3 units
   (b) Algebra and plane geometry—1 unit each
   (c) Chemistry—1 unit
   (d) Foreign language—1 unit
2. The remaining units should include history and physics.

Early Decision Plan

For the well-qualified student who has definitely decided to enter Duke if accepted, the University offers to reserve a place by "early decision" on December 1 of the student's senior year in secondary school. The deadline date for completing applications for December decision is November 1. Prospective early decision candidates should make arrangements to take the Scholastic Aptitude Test and three Achievement tests, including

English Composition, on or before the July testing date preceding their senior year.

Regular Admission

Candidates for regular admission must apply no later than January 15, and normally do so during the fall of the senior year. For this group, decisions are mailed by April 15.

Application forms and instructions regarding procedure and necessary documents to be included will be sent upon request to the Office of Admissions, Duke University, Durham, North Carolina 27706. A nonrefundable processing fee of $10.00 must accompany the submission of the full application form.

Admission to Advanced Standing

Admission by transfer from other institutions may be arranged for a limited number of students, under certain well-defined regulations. All such candidates must submit official transcripts of all work completed at other colleges, accompanied by a statement of honorable dismissal and scores on the Scholastic Aptitude Test of the College Entrance Examination Board. Transfer credit is usually granted for courses comparable to those offered by Duke University in which the student has earned a grade of "C" or better. Students may not apply for transfer beyond admission to the junior class. Further detailed regulations for admission by transfer may be obtained from the Office of Admissions.

Applicants for advanced standing in the School of Nursing should present, as far as possible, subjects corresponding to those required by the School. They may not, during their first semester, register for more than the minimum number of hours required of the class which they enter, except by permission of the Dean of the School of Nursing.

Students in the School of Nursing must be fully matriculated; however, part-time study is possible. A student not completing all requirements for the degree of Bachelor of Science in Nursing within five years will be required to apply for readmission to the curriculum then current.

The School of Nursing will accept a limited number of students who are graduates of diploma or associate degree programs for matriculation in the program of undergraduate study in nursing which leads to the degree of Bachelor of Science in Nursing. Registered nurses who are so matriculated will receive educational advisement from a designated member of the faculty of the School of Nursing. Registered nurses applying for admission to advanced standing are required to submit records of previous performance in nursing, scores on scholastic aptitude tests, and selected achievement tests.



Readmission of Former Students

Former students who have for various reasons withdrawn from college and who wish to continue their collegiate careers should apply to the Duke University Office of Admissions with a detailed account of their activities since withdrawal from college.

Undergraduate Program: Financial Information

Fees and Expenses

Fees paid by students cover only a part of the cost of their instruction and of the operation of the University. Income from endowment and contributions from the alumni, alumnae, and other public spirited men and women meet the balance, which constitutes more than half the cost.

Estimated Expenses

Certain basic expenditures are to be considered in preparing a student's budget, such as tuition, the general fee, room and board. These necessary expenditures together with a reasonable amount for a few miscellaneous items are shown in the table below. It should be realized that additional expenses will be incurred which will depend to a large extent upon the tastes and habits of the individual.

Tuition	$1,600.00	Books and Supplies**	120.00
General Fees	200.00	Activities**	18.00
†Room Rent (Double)	360.00	Uniforms***	93.00
Board*	500.00		

†Hanes House.

*No board charge for juniors and seniors. These students pay for each meal individually. Meal costs may be estimated at $70.00 per month as a minimum.

**Approximate cost.

***Approximate initial cost to freshmen for uniforms during freshman and sophomore year.

Summer Session
One term

Room Rent (Double)*	47.50
Board	85.00
Laundry**	5.00
Books and Supplies**	10.00

*Charges for one Summer term.
**Approximate cost.

Tuition and Fees

Tuition and General Fee. The tuition of $800.00 and the general fee of $100.00 are due and payable not later than the date of the beginning of a particular semester after the day of registration. No refund of the tuition or the general fee will be made except for involuntary withdrawal to enter the armed services.

Bills may be sent to parents or guardians provided the Treasurer has been requested in writing to do so. Failure to pay bills on or before the due dates will debar the student from class attendance until the account is settled in full.

No records are released and no student is considered by the faculty as a candidate for graduation until she has settled with the Treasurer for all indebtedness.

Registration Fees and Deposits. New students, on notification of acceptance, are required to pay a non-refundable first registration fee of $20.00 and to make a deposit of $50.00. The $50.00 deposit will not be refunded to accepted applicants who fail to matriculate. For those who do matriculate, $25.00 of the deposit serves as a continuing room deposit for successive semesters, and the remaining $25.00 as a continuing registration deposit.

Refunds

The initial $25.00 room deposit is effective for the entire college course of the student whose attendance during regular terms is continuous. The deposit will be refunded to resident students under the following conditions: (a) within thirty (30) days after the student has been graduated, (b) upon student's withdrawal from the University residence halls provided a written notice is received by the Director of Housing Management by August 1 for cancellation of reservation for the fall semester and not later than January 15 for cancellation of reservation for the spring semester, (c) when the reasons requiring withdrawal are beyond the student's control. No refund is made until the occupant has checked out of her room through the Office of Housing Management and has settled all her accounts with the Bursar.


HANES HOUSE
SCHOOL
OF
NURSING

Late Registration Fee

Students who register in either semester at a date later than that prescribed must pay to the Treasurer a fee of $5.00.

Readmission Fee

Students who have been readmitted to the University after an absence of one or more terms on notification of readmission, are required to make the $50.00 room rent and registration deposit.

Room reservations are made with the Director of Housing Management. An applicant who has been officially accepted as a resident student is assigned a room according to an established plan.

Fees for Special Students. Part-time special students who register for no more than two courses with a maximum total credit of eight semester hours are charged a registration fee of $5.00 for each course and $55.00 for each semester hour. Registration for 9 or more semester hours or 3 or more courses, requires payment of full fees.

Fees for Auditing. Auditing of one or more courses without charge is allowed students paying full fees, provided that the consent of the instructor is obtained. Students who are enrolled for not less than 3 nor more than eight semester hours may audit other courses by payment of $27.50 for each course audited. Auditors submit no daily work, take no examinations, and receive no credit for courses audited.

Transcript and Fees. A student who wishes to transfer his credits from Duke University to another institution is entitled to one free transcript of his record. A fee of one dollar, payable in advance, is charged for each additional copy. Requests are directed to the Records Office.

Fees for Course Change. Changes in courses for reasons not arising within the University require a payment of $1.00 for each change made.

The Summer Session

University fees for Summer Session 1968 will be charged at the rate of $47.00 per semester hour for those admitted with advanced standing. Board for resident students is charged at the rate of $85.00 for each term of Summer Session; a double room is $47.50 per person for a term of Summer Session and a single room is $65.00 for the same period. The cost of laundry is approximately $1.00 per week. A bill is sent to all preregistered students to permit payment in advance.

Living Expenses

Housing. The rental charge* for a single room is $480.00 for an academic year or $240.00 per semester. The rental charge per person for a double room is $360.00 for an academic year or $180.00 per semester.

*Hanes House.

Food Services. The charge for board is payable not later than the date of the beginning of each semester, also at the beginning of summer session. Students will not be entitled to a refund on board after the dates of the Fall or Spring mid-semester. (See Calendar.)

Student Aid

Application Procedure

All requests for applications for scholarships, grants-in-aid, industry scholarships, or remission of tuition should be addressed to the Office of Undergraduate Admissions and Financial Aid, Duke University, Durham, North Carolina.

All candidates for scholarships and grants-in-aid must submit an official Application for Admission to the University and the Application for Scholarship to the Office of Undergraduate Admissions. Scholarship candidates who desire to be considered for maximum value of scholarships on the basis of financial circumstances are required to submit the "Parents' Confidential Statement" of the College Scholarship Service which may be obtained for high school guidance personnel or upon request from the Admissions Office.

Scholarship candidates should initiate their applications during the fall semester of their senior year of study in secondary schools. Instructions concerning the specific requirements and deadline dates will accompany the application materials sent to applicants for scholarships and grants-in-aid.

It should be noted that admission decisions are made first; then among those to be accepted, all who have applied for financial aid are considered. Therefore, it should be clearly understood that *no preference* is given to applicants for admission who are not aid applicants. Quite to the contrary, Duke encourages able students who need financial assistance to apply for admission and financial aid.

Duke University School of Nursing Scholarships

Recipients of these awards are young students whose superior records, both in their academic endeavors and in their personal achievements, indicate outstanding promise of leadership in the profession of nursing. Financial need is not a factor in making the awards; however, the size of the stipend assigned to each winner will vary to some extent with the financial circumstances of the recipient. An honorary stipend for students requiring no assistance will be $200. Students needing assistance may be awarded up to $3,100 per year.

A committee of University faculty members will select the winners

and alternates on the basis of the applications submitted. Students must indicate their desire to participate in the competition on the Application for Scholarship included with admissions material. Candidates will be notified of their acceptance by the University, as well as of their eligibility to compete for the award by March 1.

This award may be renewed each year on the condition that the holder maintains a scholarship average in the top quarter of his class or a "B" average, and further, that he shows evidence of developing the qualities of leadership which served as the basis for the original selection.

Psychiatric Nursing Undergraduate Training Grant Awards

A limited number of Psychiatric Nursing Undergraduate Training Grant Awards are available to qualified Junior and Senior students. An award provides for an annual stipend plus tuition fees. Additional information about the Psychiatric Nursing Undergraduate Training Grant Awards may be secured in the Dean's office.

To qualify for an award, the student must have an above average academic record and the potential for admission to graduate study, and must declare intent to pursue a career in the field of Mental Health.

Army and Navy Nurse Corps Student Program

Students in the Basic Nursing Programs may apply for appointments in the Army Student Nurse Program at the beginning of their Junior year, or the Navy Nurse Corps Candidate Program at the beginning of their Senior year. The appointments carry generous financial allowance. A student who participates twelve months or less serves on active duty in the respective service for twenty-four months. If two years support has been given, she serves thirty-six months.

Grants-in-Aid

Although sufficient funds are not available to assist all applicants who present requests for aid, a number of grants-in-aid are made each year to able students who need financial assistance in order to meet the cost of attending college. Any candidate for admission, therefore, who considers herself to be in such need is eligible to apply for a grant-in-aid.

Applicants for grants-in-aid will be required to submit a "Parents' Confidential Statement."

Florence K. Wilson Scholarship Fund. This fund is available to nursing students who apply for grants-in-aid.

It was established in 1961 by combining the Nurses' Alumnae Association Scholarship Fund, the students' Florence K. Wilson Scholarship Fund and contributions from the Wilson family and friends. The income

of this fund is to be used for scholarships for students enrolled in the School of Nursing.

Remission of Tuition

Certain students attending Duke University are entitled to a remission of the University tuition charge. Students in this group are entitled to a maximum of eight semesters of free tuition at the undergraduate level. Each Summer Session in which work is taken and each semester spent in another institution will be counted as one of the eight allowable semesters. Only those students enrolled in the regular Nursing School program leading to a Bachelor of Science in Nursing degree are entitled to a remission of tuition charge.

Children of ministers who are members of the North Carolina or Western North Carolina Conferences of the Methodist Church are entitled to a remission of the University Tuition charge, as are the children of ministers of all faiths residing in Durham County, North Carolina. This consideration is given only to children of resident members of the two North Carolina conferences who are giving their full time to religious work.

Tuition Grants

Tuition grants are given to the children, step-children, and adopted children of certain qualified staff members of Duke University.

Loans

Loan funds held in trust by the University, as well as funds supplied by the federal government through the National Defense Education Act of 1958, are available to qualified students. Freshmen as well as upperclassmen are eligible to apply for student loans.

Loans generally mature after borrowers have left the University. Loan interest on long term loans from University funds accrues at the rate of one per cent per annum from the date of each note. After a student leaves the University permanently, the loans bear interest at the rate of three per cent per annum. The balance unpaid after five years bears interest at the rate of six per cent per annum.

In addition to local loan funds, Duke University participates in the student loan program established under the provisions of the National Defense Education Act of 1958. Repayment of loan funds from the National Defense Loan Fund normally begins nine months after the student terminates his attendance at the University, with complete repayment scheduled within a ten-year period. Interest accrues at the rate of three per cent per annum commencing nine months after the borrower ceases to be a full-time student at an institution of higher education.

Special benefits to those teaching in public or private nonprofit elementary and secondary schools and in institutions of higher education permit a portion of the loan to be cancelled depending upon the length of teaching service. Complete details regarding the student loan program may be obtained by writing directly to the Student Loan Office.

Students applying for loans are selected on the basis of character, scholastic attainment, personality, and degree of financial need. A student in residence may not, without special permission, own or operate an automobile during the academic year for which the loan is granted. Loan applications must be submitted not later than July 1, preceding the academic year for which assistance is requested.



Undergraduate Registration and Regulations

Registration

Students in residence are required to submit, not later than the date of the spring registration, cards showing their selection of courses for the following year. Evidence of the payment of the continuing pre-registration deposit of $25.00 is required before the card may be submitted. These cards, approved by the designated academic adviser, are filed for permanent record in the Central Records Office. Students who do not select their course for the following year at the time appointed must be readmitted to the college by application to the Committee on Admissions. The same regulations, with the exception of the advance deposit, apply to registration for the spring semester.

Students who register in either semester at a date later than that prescribed must pay to the Treasurer a fee of $5.00. They are counted as absent in the work they have missed in the professional courses to which they are admitted, and these absences carry the same penalty as do other absences from the professional courses. Changes in courses for reasons not arising within the University require a payment of $1.00 for each change made. No course may be elected later than one week after the opening of the semester, and no student may be admitted to any class without an official enrollment.

Orientation Program

All Freshmen and transfer students are required to participate in the activities of Orientation Week. The program includes placement tests, orientation lectures, physical examinations, social events, special religious services, registration, and enrollment. New students who miss the whole or a part of the Orientation Program place themselves at a serious disadvantage at the very outset of their college career.

During Orientation, each student is required to undergo a physical examination under the School's direction. Students whose condition needs further observation may be admitted tentatively, but must cancel their applications if findings prove them physically unable to pursue the program.

Identification Cards

On Registration Day each student is issued an Identification Card which she should carry at all times. It secures library privileges, student health services, entry into certain athletic events and admission to other functions to which student status entitles her. A student is expected to present her card at the request of any authorized official of the University.

ID cards are not transferable and the loss of an ID card should be reported immediately to the Dean of Student Affairs. The cost of a new ID card is $5.00.

Academic Regulations

Course Requirements

The normal course load for students enrolled prior to September 1968:

		s.h.
Sophomore year:	First semester	16
	Second semester	15
	Summer session	6
Junior year:	First semester	15
	Second semester	15
Senior year:	6-9 s.h. per quarter totaling	24

No student is permitted to take less than the normal course load without special permission from the appropriate academic adviser. In addition, no student is permitted to take more than the normal course load unless his average grade in the preceding semester is higher than a "C" and permission is obtained from the appropriate academic adviser. A

maximum program of 19 s.h. exclusive of P.E. has been fixed since the University is committed to quality work and education that is not exclusively course-centered.

Incomplete work. If because of illness or other emergency a student's work in a course is incomplete, she may receive an I for the course instead of a final grade. Incomplete courses must be completed before the close of the succeeding semester; otherwise the I is converted to an F and the course must be repeated in class if the student is to receive credit for it. In case a student whose work is incomplete is also absent from a final examination, she receives an X for the course.

Withdrawal. The letter W is used to indicate official withdrawal from a course. If a student drops a course without permission from his or her academic adviser, the grade for that course is recorded as "F". If she drops before six-weeks grades come out and with permission from her academic advisor, the letter "W" is used to indicate withdrawal. If a student withdraws with permission after six-weeks grades are out and is failing the course, the grade for that course is recorded as "F", unless, in the judgment of the Dean, circumstances do not justify this penality.

Reports. Reports on proficiency in academic work are sent to parents or guardians after the examinations at the end of each semester. In addition, six-weeks advisory grade reports on freshmen are mailed each semester.

Credits

The term of credit used is the semester hour which signifies one class period a week throughout the semester. Two or four hours of laboratory work are equivalent to one hour of class work. Two semesters of seventeen weeks each or three quarters of twelve weeks each constitute the academic year. For the degree of Bachelor of Science in Nursing, credit for 132 semester hours is required.

Transfer Credits. Transfer credit, in which grades of C or above have been earned, is rated at two quality points per semester hour. Courses in which grades of less than C have been earned are not acceptable for credit.

Transfer credit is evaluated from regionally accredited, degree-granting institutions. Transfer credit in which grades of "C" or above have been earned is rated at two quality points per semester hour. Courses in which grades of less than a "C" have been earned are not acceptable for credit.

Although credit for work completed at other institutions will be determined in relation to the curriculum requirements of the School of Nursing, an overall average grade of "C" on all previous work taken is required before consideration for advanced standing may be given.

Credit for courses in science, language, or nursing, offered for advanced standing by a transfer from an accredited, degree-granting institution, will be determined by the department concerned.

The maximum amount of credit acceptable from a junior college is 60 semester hours, exclusive of physical education. No credit is given for work completed by correspondence, and credit for no more than six semester hours is allowed for extension courses. Any extension work accepted must be approved by the dean.

Residence Requirements. The final two years of senior-level work in the School must be earned in residence. Students who meet this requirement but who still lack six or eight semester hours in final fulfilment of requirements may take this work in another institution of approved standing, provided the course is approved by the head of the department concerned and by the Dean.

Students who complete in a summer session the work required by the University for the degree will be granted the degree at the end of the summer.

Quality Points and Class Standing

An overall indication of the quality of student performance is provided by assigning quality points per semester hours of a course as follows:

Grade	Quality Points	Grade	Quality Points
A+	4.0	C	2.0
A	4.0	C—	1.7
A—	3.7	D+	1.3
B+	3.3	D	1.0
B	3.0	D—	1.0
B—	2.7	F	0
C+	2.3		

On the basis of these points two averages are maintained for students, one a Duke cumulative average (determined by dividing the number of quality points earned at Duke by the total number of hours carried at Duke, not semester hours passed), the other a total cumulative average. The latter also includes credit assigned to work transferred from other institutions, credit assigned to the successful completion of elective courses under the pass-fail option, and that given in recognition of successful advanced placement. In order to carry forward such credit, two quality points are assigned per semester hour. No grade is entered on a student's permanent record in the case of transfer credit or APP credit. All honors at Duke are determined on the basis of the Duke cumulative average; however, the total cumulative average is the basis for determining whether continuation and graduation requirements have been met.

Requirements for Continuation in College and for Graduation from College. To continue in college and to graduate, all students enrolled prior to September 1968 must, in addition to the requiremnets listed else-

where in this Bulletin, pass a minimum number of semester hours, achieve a specified quality point ratio, and in the case of graduation earn a minimum number of quality points. The quality point ratio is calculated by dividing the accumulated number of quality points earned by the accumulated number of semester hours carried (not semester hours passed). These requirements are listed in the following table.

For continuation from	The minimum requirement is
The first to the second year	24 s.h. credit and a q.p.r. of 1.30
The second to the third year	56 s.h. credit and a q.p.r. of 1.60
The third to the fourth year	80 s.h. credit and a q.p.r. of 1.75
The fourth to the fifth year (if needed)	114 s.h. credit and a q.p.r. of 1.85

For graduation the minimum requirement is 132 semester hours, 264 quality points, and a quality point ratio of 1.9.

In addition to the qualitative standards listed above students must pass a minimum number of hours each semester. First year students must pass at least six semester hours of work in their first semester and eighteen semester hours in their first year exclusive of physical education; all other students must pass at least nine semester hours each semester. Third and fourth year students are expected to maintain a "C average" in nursing.

Students entering the baccalaureate nursing program in September 1968 must achieve at least the following q.p.r.'s for continuation from

The first to the second year	a q.p.r. of 1.30
The second to the third year	a q.p.r. of 1.60
The third to the fourth year	a q.p.r. of 1.70
The fourth to the fifth year (if needed)	a q.p.r. of 1.80

These are minimum requirements for continuation in the School of Nursing, but do not guarantee that the student will be permitted to remain.

Evaluation of Work. The records of each student are reviewed periodically by committees composed of faculty members. The executive Committee of the School of Nursing acts on recommendations of these committees and may, if necessary, take the following steps: (a) issue warnings to students with unsatisfactory records; (b) place on probation those students whose work is poor; (c) request the resignation of any student not considered professionally suitable to receive the degree of Bachelor of Science in Nursing. The School may require a student whose record is considered unsatisfactory to withdraw, although the minimum requirements set forth have been met. Any student whose standing in the School of Nursing is below an acceptable level in either academic or clinical courses may, after careful evaluation by the faculty, be required to withdraw from the school.

Class Attendance Regulations

The attendance regulations specifically place the responsibility for class attendance upon the individual student. A student is expected to attend his classes regularly and punctually. It should be recognized that one of the most vital aspects of a residential college experience is attendance in the classroom, and that the value of this academic experience cannot be fully measured by testing procedures alone. The members of the student body are considered sufficiently mature to appreciate the necessity of regular attendance, to accept this personal responsibility, and to demonstrate the kind of self-discipline essential for such performance, and, conversely, to recognize and accept the consequences of failure to attend. Instructors are privileged to refer to the dean for appropriate action any student who in their opinion is causing his work or that of the class to suffer because of absences or latenesses.

Absences from classes due to illness will be excused when certified by a proper medical official. Absences from classes due to authorized representation of the University may be excused. Officials in charge of groups representing the University are required to submit names of those persons to be excused to the appropriate dean's office forty-eight hours in advance of the hour when their absences are to commence.

Eligibility for Academic Honors

Dean's List. In recognition of academic achievement, students who earn an average quality point ratio of 3.0 or higher on a semester's work of not less than the minimum academic load are placed on the Dean's list.

Class Scholars. A student in each class of the School of Nursing who achieves the highest quality point ratio on at least a normal course load for each academic year shall be designated a Class Scholar.

Class Honors. To be eligible for Class Honors a student must earn, during the year, credit for at least the minimum academic load permitted by the college in which she is registered. All semester hours on which a student receives a grade are counted in the determination of Class Honors. Students in the freshman, sophomore and junior classes who earn a 3.50 quality point ratio are eligible for Class Honors.

Graduation Honors. To be eligible for consideration for Graduation Honors at graduation a student must have completed in residence a minimum of ninety semester hours. Students who earn an average of at least a quality point ratio of 3.50 are recommended for a degree *magna cum laude.* Those who earn a quality point ratio of 3.75 are recommended for a degree *summa cum laude.*

Transfer to or from Schools within Duke University

A student in good standing in the School of Nursing may transfer to

The Woman's College if it appears probable that she can complete satisfactorily the requirements for graduation within the usual four-year period. She may already have incurred certain deficiencies, however, such as the lack of a foreign language course or other liberal arts courses, which will make transferring difficult. Only those students with a quality point ratio of 2.0 or higher can usually be considered for transfer.

A written request for transfer to The Woman's College should be submitted to the Dean of Undergraduate Instruction in The Woman's College by March 1st along with a written recommendation from the Dean of the school in which the student is enrolled.

A Woman's College student considering transfer to the School of Nursing or to the School of Engineering should consult with the appropriate officials of the school as well as with her dean of instruction in The Woman's College.

Nonacademic Regulations

General responsibility for the conduct of students rests with the Dean of the School of Nursing. Through the expressed willingness of the students of the University to assume the responsibility of maintaining high standards of behavior, the student body has become self-governing to a considerable degree. The duly-elected representatives of the student body exercise the authority granted by the students to investigate all cases of misconduct as well as other areas of violation of proper student standards and traditions, and to recommend penalities based on the findings. The Dean of Student Affairs assists the students in the operation of their governing procedures.

Formulation and Modification of Regulations

The regulations of the Student Government are administered and revised by the student Judicial Board in cooperation with the administration of the School. Any student, or group of students, may recommend a change in the regulations by petitioning the Judicial Board.

Judicial Structure, Procedures, and Penalties

All students in the School of Nursing live under the Honor System, a system developed by the students themselves to encourage the growth of honesty, self-discipline, and responsibility in all facets of their lives—academic, professional, and social. The two boards which administer this system are the Honor Council and the Judicial Board. Upon accepting admission to the School of Nursing, the student indicates her willingness to accept the Honor System, to respect the regulations of the School, and

to acknowledge the right of the School to require her withdrawal if, in the judgment of the constituted authorities, she fails to meet its standards. The regulations, as well as the rights and responsibilities of students, are incorporated in *The Charge*, a student handbook which is issued to students when admitted.

Social Regulations

Residential Hours

Curfew for Second-Semester Freshmen, Sophomores, Juniors, and Seniors:	2:00 a.m.
Curfew for First-Semester Freshmen:	
Before Thanksgiving:	Monday-Thursday, 11:00 p.m. Friday and Saturday, 2:00 a.m. Sunday, midnight
After Thanksgiving through last day of first semester classes:	Sunday-Thursday, midnight Friday and Saturday, 2:00 a.m.

Men visitors may be entertained in the public parlors on Sunday through Thursday until 12 midnight and on Friday and Saturday until 2:00 a.m. Men are not permitted in the private quarters of the residence.

Signing Out

Students planning to be out of a residence after 8:00, or when leaving the Durham-Chapel Hill area at any time, are required to sign an In-and-Out card. For protection of the students, information is requested concerning destination, companions, conveyance and time of return.

Overnight Leave from Campus

First year, second year, and first-semester third year students will be bound by the permissions granted them on their Parental Overnight Permission Form, a form sent to parents prior to the beginning of the student's first semester in school. If a student wishes to take an overnight which is not covered by this form, she must have an individual letter of permission from parents. These permissions may be revised at any time.

Second-semester third year, fourth year, and fifth year students are responsible for signing out for overnights at their own discretion.

Visiting Men's Residences

A woman student may go into a men's dormitory on West Campus only when visiting hours have been approved and posted in Hanes House.

Alcoholic Beverages

The University takes as its minimum regulation regarding alcoholic beverages the law of the State of North Carolina. Current University policy prohibits the use of alcoholic beverages on the grounds and in public areas. Within the residential units, students may pass regulations regarding possession and use of alcohol which are more restrictive than the state law. The law of the State and current policies are summarized in the *Charge.*

Marriages

Any student who wishes to marry and remain enrolled in the School of Nursing must, prior to her marriage, have written permission from her parents or guardian, and the approval of the Dean of the School of Nursing.

Motor Vehicles

Freshmen are not advised to own or operate motor vehicles at the University. Members of the upper classes may operate motor vehicles, however, when in accordance with University regulations.

Each student possessing or maintaining a motor vehicle at Duke University shall register it annually at the beginning of the fall semester. If a student acquires a motor vehicle after academic registration, he must register it within five calendar days after operation on the campuses begins. Resident students are required to pay an annual parking fee of $30.00 for each motor vehicle and $10.00 for each two-wheeled motor vehicle.

When registering a motor vehicle, the following documents must be presented: (a) State vehicle registration certificate; (b) valid driver's license; (c) satisfactory evidence of automobile liability insurance coverage with limits of at least $10,000.00 per person and $20,000.00 per accident for personal injuries, and $5,000.00 for property damage, as required by North Carolina Motor Vehicle Law.

Parking, traffic, and safety regulations will be issued to each student registering a vehicle.

Undergraduate Courses of Instruction

Note. The amount of credit for each course is specified in semester hours following the listing of the course. For a description of each course, consult the *Bulletin of the School of Nursing* and, for elective requirements, the *Bulletin of Undergraduate Instruction.*

Required Undergraduate Courses

English

1-2. *Freshman Composition.* 6 s.h. Staff

Physical Education

Required Physical Education. Two semester hours of physical education are required and normally completed in the first year. A swimming course is required for those who do not pass the elementary swimming test. McCue, Bookhout, Lewis, Eddy, Holton, Lloyd, Spangler, Woodyard, Wray, and Raynor

Psychology

91. *Introductory Psychology.* 3 s.h. Staff
116. *Psychology of Personality.* 3 s.h. Crovitz

Sociology

91. *Introduction to Sociology: Concepts and Procedures.* 3 s.h. Open to Freshmen. Staff
150. *The Family.* 3 s.h. Kerckhoff

Nursing and Nursing Related Sciences

N 4. *Microbiology.* 3 s.h. Nielsen
N 50. *Chemistry.* 3 s.h. Thiers and Bernheim
N 51. *Introduction to Biochemistry.* 3 s.h. Thiers and Bernheim
N 52. *Human Anatomy and Physiology.* 4 s.h. Mauskopf and Wekler
N 53. *Normal and Therapeutic Nutrition.* 3 s.h. McLachlan, Graham and Staff
N 91-92. *The Fundamentals of Nursing.* 6 s.h. each semester. Nolan, Friedel, Germino, McKee, Murphy, and Fogleman
N 120. *Nursing of Children.* 6 s.h. Hogue, Denyes, and Ritchie
N 130. *Maternity Nursing.* 6 s.h. Horton, Bowers, and Cameron
N 141. *Medical-Surgical Nursing Theory.* 5 s.h.
N 142. *Medical-Surgical Nursing Practicum.* 4 s.h.
These courses must be taken concurrently, and both must be completed satisfactorily in order to receive credit for either course. Crane, Lawrence, Norville, and Kennedy
N 155. *Community Health and Social Forces.* Must be taken concurrently with N 141-N 142. 3 s.h. Slome and Hester
N 160. *Social Foundation of Nursing.* 3 s.h. Brown and Straub
N 170. *Psychiatric Nursing.* 6 s.h. Phillips, Bullock, Bowser, and Seybolt
N 171. *Psychiatric Nursing Group Work.* 1 s.h. Phillips
N 180. *Public Health Science.* Prerequisite: N 155. 3 s.h. Public Health Nursing Faculty and Guest Lecturers
N 181. *Public Health Nursing.* Prerequisite: N 155. 6 s.h. Hester, Persing, Smith, and Young
N 191. *Team Leadership and Intensive Nursing Care.* 6 s.h. Fortune, Minniear, and Davenport

The Master's Program In Nursing

Purpose

The School of Nursing, through its division of graduate studies, offers a program in nursing leading to the Master of Science in Nursing (MSN) degree.

The general purpose of the program is to enable and encourage students to explore, develop, and test theories of nursing practice based on scientific processes, to the end that graduates will continue to seek and extend knowledge about nursing. Opportunities are provided for each student to progress toward his goals in a selected nursing specialty, such as gerontological nursing, community mental health, or geropsychiatric nursing. Concentration upon a limited area helps to deepen understanding and afford experience which will serve as a model for continuing learning.

Preparation to function as a nurse specialist or teacher is provided through elective courses, theoretical exploration, and experiences appropriate to the needs and interests of the individual student. The program incorporates and encourages independent study, innovative approaches, and evaluative methods.

Requirements for Degree

The following are required for the degree, Master of Science in Nursing:

1. Satisfaction of subject matter deficits in undergraduate study that have resulted in provisional admission to graduate study.
2. Matriculation for the Degree of Master of Science in Nursing upon satisfactory completion of the initial 12 units of graduate work and the approval of the Director of Graduate Studies.
3. Satisfactory completion of 42 units of approved courses.
4. Satisfactory performance on comprehensive examination.

Curriculum

The emphasis in the program is the exploration of the theoretical foundation for nursing practice based on scientific processes. Freedom to select courses permits concentration of study appropriate to the interests, abilities, and goals of each student.

The core content provides the individual with an opportunity to become familiar with scientific methods relating to nursing practice, to design nursing research projects, and to begin to develop theory of nursing practice in a selected area.

Throughout the year, focus will be on clinical practice; therefore, the student will use the laboratories located in the medical complex and in the community to explore and test theories.

The program of study covers four semesters. Students are admitted in the Fall of each year.

Courses required of all students are:

Nursing Courses	*Units*
Development of Nursing Theory	6
Methods of Research in Nursing	3
Nursing Elective	3
Independent Study in Nursing	5
Thesis Research	4
Cognates	
Human Behavior and Psychophysiology	3
Elementary Statistics	3
Advanced Statistics	3
Electives, Non-Nursing	12
42 units minimum requirement	42

Suggested Course Sequence

First Year

First Semester	*Units*	*Second Semester*	*Units*
Development of Nursing Theory	3	Development of Nursing Theory	3
Human Behavior & Psychophysiology	3	Methods of Research	3
Elementary Statistics	3	Electives	6
Elective	3		

Second Year

First Semester		*Second Semester*	
Nursing Elective	3	Thesis Research	4
Advanced Statistics	3	Independent Study in Nursing	5
Elective	3		

Academic Regulations

Registration

All students who enter course work for credit and all students who have completed minimum requirements for an advanced degree but continue to use the facilities of the University in their research must complete the registration procedures.

After the applicant has received notification of admission and has submitted a statement of acceptance of admission, she is eligible for registration. All students are expected to register at the time stated. Those registering later are subject to a late registration fee of five dollars.

Change of Registration. During the academic year within a period of fourteen days from the specified day of registration, students may change their schedules with the approval of the Director of the Graduate Program.

Course Requirements and Credits

Although ideally graduate study is principally individual reading, research, and laboratory experimentation under guidance, academic progress in the United States is generally measured and recorded in terms of course hours and credits. Peculiar to graduate study is the term residence, also generally measured in hours, to designate individual study apart from courses, such as writing a thesis and preparing for general examinations. Since September, 1959, in this University, graduate credit

for courses and seminars, research, and residence, and corresponding tuition and fees have been stated in terms of units. According to conventional measurement one unit is equivalent to one semester hour. Thus a course previously described as carrying a credit of 3 s.h. now carries a credit of 3 units.

Normally, graduate students who do not carry teaching or assisting duties carry a full load of graduate work until the requirements of the degree are met.

Courses Primarily for Undergraduates. Students granted provisional admission may on occasion be required to take, as part of their program, undergraduate courses as prerequisites to continued graduate study. Undergraduate courses thus taken and others elected by the student will carry no graduate credit.

In exceptional cases, 100-level courses outside the major department may be taken for graduate credit to a maximum of two one-semester courses or one year course not exceeding a total of 8 units, when approved by the Director of the Graduate Program in the major department and in the department in which the course is listed.

Residence Requirements. Candidates for the Master's degree must spend, as a minimum, one academic year at Duke University. Often more time will prove necessary depending upon the nature of the student's program of studies.

Transfer of Graduate Credits. Under certain circumstances a maximum credit of 6 units may be allowed for graduate courses completed elsewhere. The acceptance of credit up to this amount, however, will not reduce the minimum period of full-time registered residence at Duke University.

Grading

Grades in the Graduate Program are as follows: *E*, *G*, *S*, *F*, and *I*. *E* (exceptional) is the highest mark. *G* (good) and *S* (satisfactory) are the remaining passing marks. *F* (failing) is below passing, and *I* (incomplete) indicates that some portion of the student's work is lacking, for a satisfactory reason, at the time the grades are reported. The instructor who gives an *I* for a course specifies the date by which the student must have made up the deficiency. In no case may an extension be granted beyond one calendar year from the date the course ended. If the course is not completed, a statement of *No Credit* is made upon the student's record.

Time Limits for Completion of Master's Degrees

The candidate for the Master's degree who is in residence for consecutive academic years should complete all requirements for the degree within two calendar years from the date of her first registration in the

Graduate Program. Any candidate *must* complete all requirements within six calendar years of her first registration. Credits earned over a longer period of time cannot be credited toward a degree.

Withdrawal and Interruption of Program

From a course. After 14 days from the date of registration students may drop courses only with the approval of the Director of the Graduate Program, the instructor of the course to be dropped, and the Dean of the School of Nursing. If the course is dropped without the necessary approval, the permanent record will list the course as *Dropped Unofficially, F*. If a course is dropped 30 days or more after the beginning of the class for the semester involved, the status of the student at the time of withdrawal from the course will be determined and indicated by the designation *Withdrew Passing* (W.P.) or *Withdrew Failing* (W.F.)

From the School. The University reserves the right, and matriculation by the student is a concession of this right, to ask the withdrawal of any student whose conduct at any time is not satisfactory to the University. If a student wishes for any reason to withdraw from the School she should notify both the Director of the Graduate Program and the Dean of the School prior to the date of her expected withdrawal.

Students who find it necessary to interrupt their program of study for a period longer than a summer vacation should, before departure, provide in writing a statement of the reason for interruption, mailing address, and expected date of return.

Fees and Expenses

Tuition and General Fees

The following tables show the general fees and charges collected from all students. All fees for each semester are due and payable, unless otherwise specified, at the time of registration for that semester. No student is admitted to classes until arrangements have been made with the Treasurer of the University for the settlement of fees.

Tution per semester	$800.00
General fee per semester	100.00
Summer Session (per unit)	47.00

Tuition and fees for a full semester program of 16 units amount to $900.00. For a part program in the regular semesters, tuition and fees are computed at the rate of $55.00 per units plus $5.00 fee for each course. Tuition and fees for course work in the Summer Session are computed at the rate of $47.00 per unit. Federal traineeships are available for a selected number of qualified applicants.

Special Fees for Teachers and Others

The University recognizes a special obligation to encourage the following types of students in their professional and personal advancement: (1) members of the faculties of the neighboring public schools and colleges, currently engaged in full-time teaching while taking courses in the Graduate School, (2) ministers of neighboring churches, (3) wives of Duke faculty members, (4) certain full-time employees of Duke University with two or more years service. The reduced fees do not apply to teachers and ministers while on leave of absence, nor to holders of fellowships, scholarships, or graduate and research assistantships, nor to part-time instructors.

Persons eligible for the reduced fee must meet the admission standards required of all graduate students and must be admitted to the Graduate program. They may enroll for one or two courses per semester (in no case totaling more than 7 units) upon payment of a fee of $5.00 for registration for each semester and a tuition fee of $27.50 per unit of credit or an audit fee of $27.50 per course. The *in absentia* fee will not be charged at this rate.

Living Accommodations

*Housing**

The graduate student in the School of Nursing may apply for one of the following types of accommodations:

The Graduate Center Women's section. The Graduate Center houses 258 graduate men, 60 graduate and paramedical women students, and 56 undergraduate women in sections established within this residence hall. Men and women share the commons facilities on the main floor and the dining facilities on the ground floor. The rental rate per student is $325.00 for the academic year.

Hanes Annex: The first floor of this residence hall is reserved for graduate women and paramedical students. The commons areas are shared with seniors in the School of Nursing who occupy the entire second floor. The rental rate per person is $355.00 for the academic year for each occupant.

Graduate students in the School of Nursing should write directly to the Director of Housing Management for detailed information concerning graduate housing, application procedures, rental rates, and other pertinent information.

Rooms and space in the apartments are rented for a period of not less than one semester unless special arrangements are made through the Office of Housing Management after official acceptance for admission to

*Information pertaining to housing is subject to change prior to September, 1968.

the University. Students may arrange for apartments or rooms in private homes in the city. The Office of Housing Management of the University maintains a file of rooms and apartments listed with it for rental. Students may use this file as an aid to locating suitable living accommodations.

Food Services

Food service on both the Woman's College Campus and the West Campus is cafeteria style. The dining facilities on the West Campus include two cafeterias with multiple-choice menus, a grill, and, in addition, the Oak Room where full meals and a la carte items are served. The Men's Graduate Center has a cafeteria open at meal hours, and a coffee lounge which is open until 11:00 p.m. The prices are the same as in the West Campus Union. Because of the large number of those served in the dining halls, it is not possible to arrange special diets for individual students.

Services Available

Medical Care

The complete medical facilities of the Duke University Medical Center are available to all members of the University community. To secure the benefits of the Student Health program, a graduate student in residence during the term or semester in which the illness occurs must be registered for at least 9 units per semester, and in the Summer Session term for at least 3 units. Students are not covered during vacations and their dependents and members of their family are not covered at any time. Care is provided at the Health Office in Hanes House.

The service provided includes hospitalization in Duke Hospital, when recommended by the Hospital staff, to a limit of thirty days; medical and surgical care under the supervision of a senior physician or surgeon; drugs, X-ray work, and ward nursing. Students pay for board while in the hospital. Excluded from the service are refraction of eyes, treatment of teeth and of all chronic and pre-existing conditions, and elective surgery.

Graduate students are urged to carry adequate health insurance to supplement Student Health Program services. If students have insurance providing hospitalization, surgical, or medical benefits, the benefit shall be applied to the cost of their medical care.

Recreational Facilities

Graduate students new to Duke University may be reminded that they are welcome to use such recreation facilities as swimming pools, tennis courts, golf course, and to affiliate with choral, drama, and religious groups.

Graduate Courses of Instruction

N 251. *Human Behavior and Psychophysiology.* 3 units. Reckless
N 261-262. *Development of Nursing Theory.* 6 units. Stone and Staff
N 265. *Methods of Research in Nursing.* 3 units. Thompson
N 331. *Attitude Organization and Change.* 3 units. Thompson
N 333. *Curriculum Planning in Professional Nursing Schools.* 3 units. Crossland
N 335. *Gerontological Nursing.* 3 units. Stone
N 337. *Psychiatric Nursing.* 3 units. Stone and Staff
N 360. *Thesis Research.* 4 units. Staff
N 365. *Independent Study in Nursing.* 5 units. Staff

Summer Session

Table of Contents

General Information 1

Courses of Study and Requirements for Degrees 3
- Undergraduate Study 3
- School of Nursing 3
- Divinity School Studies 4
- Graduate Study 4

Special and Cooperative Programs 11

Resources for Study 15
- University Libraries 15
- Laboratories 15

Student Life 17
- Living Accommodations 17
- Services Available 19
- Student Activities 21
- Publications 21

Admission 22
- Students in Residence 22
- Students Not in Residence 23

Financial Information 26
- Fees and Expenses 26
- Student Aid 29

University Registration and Regulations 31
- Academic Regulations 35
- Other Regulations 38

Courses of Instruction 39

General Information

The Summer Session at Duke University makes available to Duke students, to students from other universities and colleges, to teachers in elementary and secondary schools, and to other special students a notable program of instruction in many fields of knowledge, both academic and professional.

Course programs offered during the summer are designed to meet special and particular needs as well as the more conventional requirements leading to specific degrees.

Postdoctoral research scholars may find the regular Summer Session courses useful for further study. The library facilities and the various laboratories may be of value for postdoctoral residents.

Graduate students who have been admitted to the Graduate School to study for the Master of Arts, Master of Education, and Master of Arts in Teaching degrees will find courses arranged in sequence from summer to summer to meet their requirements.

Teachers from elementary and secondary schools who desire to earn credits toward the renewal of their certificates and who are interested in further teacher training in subject content and method may enroll in senior-graduate courses as special or unclassified students.

Undergraduates of Duke University who desire to accelerate their programs may complete the work for a degree in three years by attending two or more Summer Sessions.

Undergraduates from other colleges and universities may enjoy the

special advantages of summer instruction at Duke and transfer earned credits to their own institutions.

Graduates of accredited high schools, both men and women, who have been admitted to the freshmen class of Duke University may begin their work in the Summer Session.

While the summer course program meets in many departments the needs of degree candidates, it goes beyond these limits in presenting also courses of wide general interest and, in addition, special non-credit lectures, conferences, institutes, and workshops.

Duke University's ample and modern research facilities will be available during the summer to all properly qualified students. It is the hope of the University, of the summer faculty, and of the administrative officers that former students and new students will find increasing values in each summer spent at Duke.



Courses of Study and Requirements for Degrees

Undergraduate Study

Students in the undergraduate colleges of Duke University who desire to enrich or accelerate their academic programs will find the summer offerings of interest. Special courses are provided which are not otherwise available to undergraduates; election of the usual course offerings may relieve an overload during the fall or spring terms. Summer programs enable some students to attain provisional graduate status in the senior year or to graduate early.

By attending both terms of the Summer Session it is possible for a student to elect as many as four courses and earn up to 12 s.h. credit. Instruction will be offered in the summer of 1968 in most departments and colleges. Specific requirements for degrees offered in the undergraduate colleges may be obtained from the regular *Bulletin* of Undergraduate Instruction.

School of Nursing

The programs of the School of Nursing include courses in the Summer Session. Persons desiring to enroll in courses to meet the requirements of

the School of Nursing programs must be regularly enrolled students. Students who have been admitted with Advanced Standing and who may wish to make up deficiencies in the Summer Session must have courses approved by the School of Nursing. Information about required courses is published in the regular *Bulletin* of the School of Nursing. For further information write to the Dean of the School of Nursing, Duke University, Durham, North Carolina.

Divinity School Studies

The degrees of Bachelor of Divinity, Master of Theology, and Master of Religious Education are administered by the faculty of the Divinity School. A limited number of courses carrying credits toward these degrees is listed herein under the heading of Divinity School. Persons desiring credit toward one of these degrees must be regularly admitted to the Divinity School, and all courses listed for Divinity School credit must be registered and approved in the office of the Divinity School. Students should consult the *Bulletin* of the Divinity School for specific requirements for the various degrees offered. This school publishes its own Summer Session *Bulletin*, a copy of which may be secured by addressing The Office of the Dean, The Divinity School, Duke Station, Durham, North Carolina.

Graduate Study

Summer Sessions offer an excellent opportunity to advance or complete programs of graduate study already undertaken, to begin study toward a graduate degree at Duke University, to acquire graduate training useful in professional advancement, or to study for personal satisfaction. The several departments offer a variety of graduate courses, as listed in later pages, given by members of the Duke faculty and visiting professors. Especially full programs are provided in Botany, Education, English, History, Psychology, Sociology, and Zoology.

Postdoctoral Research

Scholars engaged in postdoctoral research find it advantageous and sometimes essential to use in summer the resources of the Duke University libraries. The University welcomes these visitors and makes available to them the living accommodations of the dormitories and the dining halls during the Summer Session, June 11 to August 24.

The Ph.D. and Ed.D. Degrees

Study for the Ph.D. Degree. Students who are interested in working toward a Ph.D. degree should note in detail the requirements as outlined in the *Bulletin* of the Graduate School of Arts and Sciences. Requirements for the Ph.D. include one academic year of full-time residence.

Study for the Ed.D. Degree. Students who are interested in working toward the Ed.D. degree or for advanced certificates for principals and supervisors should consult the detailed statement in the *Bulletin* of the Graduate School of Arts and Sciences. Requests for specific information regarding residence and programs for the Ed.D. degree should be sent to the Director of Graduate Studies, Department of Education.

The Master's Degree

Candidacy. As a candidate for a Master's degree (A.M., M.S., M.Ed., M.A.T., M.H.A.) the graduate student must (1) have made passing grades in all courses taken during the first period of residence (if he registers for fewer than 12 units of graduate courses during the first period of residence, he must make passing grades on the initial 12 units of graduate courses), (2) have made a grade of "G" or "E" on at least 3 units of this work, and (3) have received the approval of the major department (or in the case of the M.A.T. of the supervisory committee).

Time Limits for Candidates. A candidate for a Master's degree who is in residence for consecutive academic years should complete all requirements for the degree within two calendar years from the date of his first registration in the Graduate School. Any candidate must complete all requirements within six calendar years of his first registration.

Master of Arts

Language Requirements. The candidate for the A.M. degree must have a reading knowledge of at least one foreign language. (The several departments reserve the right to specify which foreign languages are acceptable.) The language requirement is met by successfully passing examinations as follows:

a. For French, German, and Russian students admitted in September, 1964 and thereafter take the Educational Testing Service examination given at the Duke University Counseling Center and elsewhere. Students who were admitted before September, 1964 may take either these examinations or the regular reading examination offered by the respective departments.

b. For Spanish the department reading examinations will be taken by all students.

c. For other languages, special examinations must be requested.

Major and Minor Subjects. As a prerequisite to graduate study in his major subject, the student must have completed a *minimum* of 12 semester hours of approved college courses in that subject, and 12 additional semester hours in that subject or in related work. Since some departments have specific requirements for undergraduate preparation, the student should read carefully the special requirements listed by his major department, which are included as headnotes to the course offerings in the *Bulletin* of the Graduate School.

To complete the course requirements for the A.M. degree, the student must take 24 units of graduate courses, of which at least 12 must be in the major subject. Of the remaining 12 he must take 6 units of course work in a minor subject, leaving 6 units of course work to be taken in either the major or minor field, or in another field approved by the major departments and the Dean of the Graduate School. In addition to the course work, the student must present a thesis which carries a credit of 6 units. Thus, the total credit required for the A.M. degree amounts to 30 units.

The Thesis. The thesis for the A.M. degree should demonstrate the student's ability to collect, arrange, interpret or report pertinent material on his special research problem. Although a publishable document is not required, the thesis must be written in a literate style, and should exhibit the student's competence in scholarly methods and procedures.

Regulations and Procedures. Students expecting to complete all requirements for a Master's degree should file with the Graduate School office *not less than one month* prior to first presentation of the thesis a declaration of intention to receive the degree and a thesis title. Candidates completing requirements for a Master's degree without thesis should file the same official blank *one month* prior to completion of all degree requirements. Official blanks may be obtained from the Graduate Office or from the Director of Graduate Studies in the student's major department.

Four typewritten copies of the thesis, in the spring binders provided by the Duke University Library, must be submitted, in approved form, to the Dean of the Graduate School at least *three days* before the date of the thesis examination. The copies will then be distributed to the several members of the examining committee.

The Examining Committee and the Examination. After consultation with the professor who has directed the thesis work, the Director of Graduate Studies in the major department appoints an examining committee composed of the director of the thesis as chairman and two other members of the graduate faculty, one of whom should represent the

minor department. The committee composition is subject to approval by the Dean of the Graduate School. The candidate appears before this committee for an examination, which lasts for about one and one-half hours. The subject matter covered in the examination is usually restricted to the thesis and to the major field.

If the candidate passes his examination, the examining committee certifies to this fact by signing the title page of the ribbon copy and first carbon copy of the thesis. The candidate then returns the original and first carbon copy of the thesis to the Dean of the Graduate School for binding and deposit in the University Library. The binding fee is $5.00 a volume.

Master of Education

Prerequisites. The degree of Master of Education is granted ordinarily only to teachers or to others engaged in educational work.

Before a student is admitted to graduate study for this degree, he should have completed, on the undergraduate level, a minimum of 18 semester hours of approved work in Education.

Requirements for the Degree Without Thesis. The required work includes a departmental major (Elementary Education, Administration, Counseling, Secondary Education or Teaching the Emotionally Disturbed) of at least 12 units, and a minor of at least 6 units outside the Department of Education. The remaining 12 units are elective within the area of Education and the minor field, but require the approval of the student's major adviser and the Director of Graduate Studies.

Toward the end of his residence the student must pass a comprehensive examination on his departmental major. Permission to take such examination must be obtained from the Director of Graduate Studies of the Department of Education, and a notice of intention must be filed with him *at least two weeks* before the announced dates of the examination

Requirements for the Degree With Thesis. Students who elect this plan are permitted to substitute a thesis for 6 units of the required course work. The thesis subject must be approved by the professor who is to direct it and by the Director of Graduate Studies. Students expecting to complete all requirements for a Master of Education degree should file with the Graduate School Office *not less than one month* prior to first presentation of the thesis a declaration of intention to receive the degree and a thesis title. Official blanks may be obtained from the Graduate Office or from the Director of Graduate Studies in the Department of Education.

In addition to the thesis, the student must present at least 24 units of course credit. Of these, 12 units must be taken in the student's departmental major. Six units, constituting a minor, must be taken outside the Department of Education. The remaining 6 units are elective within the

area of Education and the minor field, but require the approval of the student's major adviser and the Director of Graduate Studies.

The regulations concerning the writing and submission of the thesis, and the examination of it, are the same as those governing the thesis for the Master of Arts degree.

Master of Arts in Teaching

Prerequisites. The degree of Master of Arts in Teaching is designed for teachers already in service and for recent graduates of liberal arts colleges who wish to enter public school, private school, or junior college teaching.

A student should normally have completed a minimum of 12 semester hours in his proposed major subject and an additional 12 semester hours in that or related subjects. In the event that a student wishes to undertake a graduate major different from the undergraduate major, the prerequisites may be modified upon the recommendation of the student's committee and the approval of the Dean of the Graduate School.

Programs for the Degree. One of two programs may be arranged, in consultation with the student's committee:

a. A major in Education of 18 to 24 units and 6 to 12 units in courses outside the Department of Education.
b. A major in a department other than Education of 18 to 24 units and 6 to 12 units in Education.

In both programs a minimum of 30 units is required.

The courses outside the Department of Education are to be taken in one or more subjects ordinarily taught in the secondary schools. The amount and distribution of this work will be determined by the needs of the individual student.

The Master of Arts in Teaching may be earned with or without the presentation of a thesis. If a student, in consultation with his committee, elects to present a thesis, 6 units of the total of 30 units required will be allotted to thesis research. He will then be required to complete 24 units of course credits. The regulations concerning the writing and submission of the thesis, and the examination on it, are the same as those governing the thesis for the Master of Arts degree.

Candidates for the Master of Arts in Teaching who have not had teaching experience must major in Education and are required to take Education 215 (or 315) and 216, in which case a minimum of 36 units is required.

The Committee. Each candidate for the degree will be assigned a committee, appointed by the Director of Graduate Studies in his major department, to plan his program of study.

This committee will consist of three members, at least one of whom will be from the Department of Education, and at least one from another

department. The chairman of the committee will normally be chosen from the department of the major.

Cooperative Program in Teacher Education. Thirty-five to forty selected graduates of liberal arts colleges who desire to prepare for high-school teaching will be admitted to a special internship program at Duke University. This program is designed to prepare for a teaching career selected college graduates who did not prepare professionally for teacher certification as undergraduates. The Cooperative Program provides, for candidates who are chosen, graduate study in their special fields, professional courses, and carefully supervised observation and teaching experience. One who completes the program successfully can achieve within a period of fifteen months a year of teaching experience, a Master of Arts in Teaching degree, and full certification as a teacher.

Candidates will begin the program at the opening of the Summer Session of 1968 and complete it in August of 1969. They will spend the summer preceding and the summer following the year of teaching in residence at the University. During the school year 1968-1969 interns will be employed as regular teachers in a cooperating public school system. During this year they will receive full salary and will work under the joint supervision of the cooperating public school and the University. The program will meet training qualifications for the advanced, or graduate, teacher's certificate in many states. Participants in the program are expected to teach for a second year as fully certified teachers in the school in which they complete the internship.

The salary for the year of teaching will, in effect, constitute a substantial award to candidates selected for the program. Interns will benefit from Duke University's special tuition rate for teachers. Applicants will be considered, as are candidates for other awards, on a competitive basis. The best-qualified applicants will be chosen on the basis of undergraduate record, recommendations, and evidence of interest in becoming high-school teachers. Applicants are required to arrange interviews in connection with their applications. Application forms may be secured by addressing a request to the Dean of the Graduate School and should be submitted before February 15, 1968. Details concerning the program can be obtained by writing the Director, Cooperative Program in Teacher Education, Department of Education, Duke University.

Master of Science

The degree of Master of Science is offered in the three fields of Engineering—Civil, Electrical, and Mechanical—and in Forestry.

Prerequisites—Engineering. As prerequisites to this degree, the student must have earned a Bachelor's degree from an accredited engineering college and have completed a minimum of 12 semester hours work in the major field.

Prerequisites—Forestry. As prerequisite to this degree, the student

must have earned a Bachelor's degree which represents an undergraduate program in forestry or an allied field.

Language Requirements. For the Master of Science degree no foreign language is required.

Major and Minor Subjects—Engineering. The work for the Master of Science degree is designed to provide a broad foundation in the fields of civil, electrical, and mechanical engineering. The student must present acceptable grades for a minimum of 24 units of graduate courses: at least 12 in course work in his major area of concentration in engineering (not necessarily confined to the offerings of the engineering department in which the student is registered); a minimum of 6 units in a minor subject outside of engineering which lends broad support to his program (usually in mathematical or natural sciences); and the remaining 6 of the 24-unit course requirement in either the major or minor subject, or in an area approved by the major department and by the Dean of the School of Engineering. In addition to the 24-unit course requirement, the student must present a thesis, which carries a credit of 6 units. Thus his earned credit for the degree totals a minimum of 30 units.

Major and Minor Subjects—Forestry. The work for the Master of Science degree is designed to provide a broad foundation in forestry and allied fields. Course requirements are 12 units in forestry, a minimum of 6 units in a minor field outside of forestry, and the remaining 6 units in either the major or the minor field, or in another area approved by the Director of Graduate Studies in Forestry and by the Dean of the Graduate School. In addition to the 24-unit course requirement, the student must present a thesis which carries 6 units of credit. Thus his earned credit for the degree totals a minimum of 30 units.

Thesis and Examination. The regulations and procedures for the thesis and the provisions for examination and an examining committee are the same as those for the Master of Arts degree.

Completion of Requirements for Degree on September 1

Candidates for degrees in the Graduate School of Arts and Sciences desiring to have their degrees conferred on September 1, must have completed all requirements for the degree as of the final day of the Duke University Summer Session. A candidate completing degree requirements after that date will have his degree officially conferred at the following June Graduation Exercises. (Transfer of credit for work completed at other universities must be recorded by September 15.)

Special and Cooperative Programs

Cooperative Programs

The long-standing reciprocal agreement with the University of North Carolina is now effective during the respective Summer Sessions of this University and the University of North Carolina. To take advantage of this arrangement the eligible student, in one or two terms of the Summer Session, registers each term for 3 units of credit at the home institution and 3 units representing the course to be taken at the other institution, for a total of 6 units. A nominal registration fee of $2 will be charged at the other institution. Credit so earned is not defined as transfer credit. This program applies to both graduate and undergraduate students.

Special Conferences and Courses

Special Programs for Teachers of Science and Mathematics

It is anticipated that the Summer Session will offer a number of special programs at the graduate level designed specifically for high-school teachers of science and mathematics. For detailed information on the

programs, teachers should write Dr. Thomas Reynolds, Mathematics Department, Duke University, Durham, North Carolina.

Conference on School Law

A conference on school law will be held on Duke University campus on June 25-26. The program is planned for the benefit of administrators and teachers in schools and colleges. Speakers and consultants well known in the field of school law will participate in the two-day conference.

Duke University ABC Program

In the summer of 1968, Duke University will sponsor for the third consecutive year a program known as Project ABC (A Better Chance). This program will bring to the campus for an eight-week period a group of boys, ages thirteen to sixteen. These students will participate in an intensive program in reading, English, and mathematics in preparation for their entrance in the fall to independent boarding schools. Project ABC was established in order to assist those students chosen by the Independent Schools Talent Search Program and various foundations who, in spite of their ability and motivation, may be unprepared for the more difficult curriculum and for the way of life at boarding school.

Southeastern Institute of Medieval and Renaissance Studies

The Southeastern Institute of Medieval and Renaissance Studies has been established for the advancement of scholarship and the improvement of teaching in the southeastern region. Through the Institute the resources of Duke University and the University of North Carolina—particularly library holdings—will be made available to scholars and teachers throughout the region. Students of all areas of medieval and renaissance studies will participate. The Institute will alternate annually between the campuses of Duke University and the University of North Carolina at Chapel Hill. The fourth session, from July 19 to August 24, 1968, will be held on the Duke University campus.

Highlands Biological Station

Duke University holds a subscribing instructional membership in the Highlands Biological Station at Highlands, North Carolina, on the southern edge of the Blue Ridge Mountains at an elevation of 4,118 feet. The situation and the region offer an excellent opportunity for field studies and limited laboratory work. A limited number of qualified students in Botany and Zoology may make arrangements to carry out research at this station.

Medical Mycology

A month's course in Medical Mycology, under the direction of Dr. Norman F. Conant, is to be offered at Duke University School of Medicine and Duke Hospital, July 2–July 27, 1968. The course will be offered every day in the week, except Sunday, and has been designed to insure a working knowledge of the human pathogenic fungi within the time allotted.

Emphasis will be placed on the practical aspects of the laboratory as an aid in helping establish a diagnosis of fungus infection. Insofar as possible and as patients become available, methods of collecting materials in the clinic for study and culture will be stressed. Work with patients, clinical material, cultures, and laboratory animals will serve as a basis for this course. Also, an opportunity to study pathologic material, gross and microscopic, will be given those whose previous training would allow them to obtain the greatest benefit from a study of such material.

The enrollment for the course will be limited and the applications will be considered in the order in which they are received. An attempt will be made, however, to select students on the basis of their previous training and their stated need for this type of work.

A fee of $100.00 will be charged for this course, upon the completion of which a certificate will be awarded. However, an applicant upon acceptance into the course may register with the Summer School, pay its fees instead of the aforementioned fee, and receive 3 hours graduate credit for the course. Please direct all inquiries to Dr. Norman F. Conant, Professor of Microbiology, Duke University Medical School, Durham, North Carolina.

The Methodist Course of Study School

The twentieth session of the short-term school for Methodist ministers taking the required Course of Study will be conducted during the period, July 8–August 2, 1968. While this School is designed primarily for Supply Pastors and other non-seminary candidates for the Methodist ministry, clergymen of any denomination may enroll. The curriculum, as approved by the 1964 Methodist General Conference will be followed, will include Studies for License to Preach, Introductory Studies and the Studies for the First, Second, Third, and Fourth Years.

In addition to class work, there is provision for daily worship and a number of special lectures and workshops. A varied program of recreation and athletics will be supervised by the University Department of Physical Education.

Registration is scheduled for July 8. Classes begin on the morning of July 9 and continue through August 2. A descriptive folder giving

details of the School will be ready for distribution about March 1, 1968, and copies may be procured by writing to Professor O. K. Ingram, Director, Box 4484, Duke Station, Durham, N. C.

Divinity School Summer Clinics

Summer Clinics in Church Planning and Development, Pastoral Care, Preaching, Theology, Campus Ministry, and possibly other topics will be held simultaneously July 29–August 9, 1968. These clinics are designed to supplement seminary education through two weeks of intensive training in one selected subject. Each has its own leaders and schedule. However, the several groups will be together for special features and lectures. Registration is open to ministers of all denominations. Participants are expected to attend the full two weeks from the opening dinner to the closing luncheon. No academic credit is given. Please address requests for information, costs, and financial aid to: Dr. M. Wilson Nesbitt, Director and Registrar, Box 4814, Duke Station, Durham, North Carolina 27706.



Resources for Study

Libraries

The University libraries, with 1,863,000 volumes and 4,000,000 manuscripts, provide exceptional resources and facilities for study and research by undergraduate and graduate students and visiting scholars. They contain, in addition to books and manuscripts, microform copies of many thousands of rare books and long runs of newspapers and periodicals. About 82,000 volumes were added in 1966-67, while 164 foreign and domestic newspapers and 9,400 periodicals are received currently. Study facilities are provided for 269 graduate students in air-conditioned stacks of the General Library.

Construction of the main research library, adjoining the present building on the West Campus and providing more than twice the space now available for books and readers, will be completed in the spring of 1968. The entire complex was named on Founder's Day in 1966 the William R. Perkins Library in honor of a close associate of Mr. James Buchanan Duke.

All libraries of the University are open for use throughout the summer. A "Student's Guide to the General Library" and a brochure on "The Library of Duke University" which describes the building and collections in general detail are available on request addressed to the Librarian of the University.

Laboratories

The laboratories in the various Science Departments (Botany, Chemistry, Physics, Psychology, and Zoology) are designed for both teaching and research. Ideal locations for special work in some of the sciences are available at Duke University Marine Laboratory at Beaufort, North Carolina; at Highlands Biological Laboratory at Highlands, North Carolina; in the Duke Forest at Durham, North Carolina; and in the Sarah P. Duke Gardens on the West Campus of Duke University.



Student Life

Living Accommodations

Summer Session students reside in resident facilities on West Campus of Duke University. Air-conditioned residence halls will be available for undergraduate men and graduate and undergraduate women. Some units in Town House Apartments on Swift Avenue and a women's section in the Graduate Center will be available to graduate women. Graduate men will be assigned to the men's section in the Graduate Center near the Medical Center. Married graduate and professional students, with no more than two children, may rent apartments in Duke University Apartments on a space available basis.

Undergraduates, both men and women, are required to live in the residence halls unless they are married or living with parents or relatives. Any exception must be approved in advance by the Dean of Undergraduate Women or the Dean of Undergraduate Men, as appropriate.

The majority of residence hall rooms at Duke University are double rooms furnished for two persons. A limited number of single rooms are equipped for one person and are assigned in order of receipt of application with the required rental payment in the office of the Director of Housing. No double room in the air-conditioned section may be reserved for single occupancy. Double rooms in the non-air-conditioned

residence halls may be rented for single occupancy at the rates shown on page 27.

Summer Session students who will be in residence at Duke University for both summer terms must so indicate on the Summer Session Housing Application and pay for both terms in advance. Those applicants who apply for housing for one term only but desire to remain for a longer period or those who fail to pay rent in advance for both terms at the time of application may be requested to move for the Second Term.

Assignment Procedures

Undergraduate Men: Three sections of the air-conditioned residence halls will be reserved for undergraduate men. If additional spaces are required, one or more houses will be opened on the main quadrangle.

Undergraduate Women: Rooms in the air-conditioned residence halls will be available for assignment to all undergraduate women.

Graduate Men: The men's section of the Graduate Center will be available for graduate men.

Graduate Women: A section in the air-conditioned residence halls, spaces in Town House Apartments, and rooms in the women's section of the Graduate Center (not air-conditioned) will be available for graduate women. Priority for air-conditioned residences and apartment-type accommodations will be given to those graduate women applicants who apply for eight weeks or more of the Summer Session and make payment for the entire period of application.

If the type of accommodation for the first choice by a student is not available, another type of accommodation at a lesser cost will be assigned unless the applicant indicates otherwise.

Married Graduates: Graduate students who will be accompanied by their families and desiring to occupy family units in Duke University Apartments should write directly to the Director of Housing Management, Duke University, Duke Station, Durham, North Carolina 27706.

Equipment

Air-conditioned Residence Halls: Each student will be provided with a sofa-bed with cover, desk with chair, dresser with mirror, waste basket, and adequate closet space. Each room is equipped with draperies, carpeting, and wall book shelves. The student should provide a desk lamp, sheets, blanket, pillow, and other items desired. Beds measure 80 inches by 30 inches.

Non-air-conditioned Residences: Each student is provided with a 36 by 74 inch bed, dresser with mirror, desk with chair, and a bookcase. The student should provide a desk lamp, sheets, blanket, and pillow. An electric fan is recommended.

Town House Apartments: Each attractive, air-conditioned apartment is equipped for three women students, and includes living room, kitchen, master bedroom (2 students) with half bath, a single bedroom (one student), and a master bath with tub and shower. Housekeeping supplies, kitchenware, and linens must be provided by the occupants. It is recommended that two or three students apply to reside together in one of these units. These units are available for family use during summer months.

Duke University Marine Laboratory

The Duke University Marine Laboratory, located on Pivers Island adjoining the United States Bureau of Fisheries across the Newport River from Beaufort, North Carolina, has cottage-type residence halls which will be available for Summer Session students. All rooms in the Marine Laboratory residence halls are equipped for two persons. There is a separate building for dining and social activity. Double rooms will not normally be occupied as single rooms for the Summer Session. Reservations for rooms at the Marine Laboratory at Beaufort should be made with the Business Manager, Duke University Marine Laboratory, Beaufort, North Carolina, by submitting a Summer Session Residence Hall Application with your personal check for the amount of your room rent.

Dining Service

Food service is cafeteria style. The cost of meals runs from $2.50 to $3.00 per day, depending on the need and taste of the individual. Only the dining facilities on the West Campus will be used for the regular Summer Session students. The cafeteria in the Men's Graduate Center is usually not open in the summer.

Services Available

Medical Care

The Student Health Service, in the Duke Medical School Building, operates during the Summer Session and offers exactly the same medical and surgical services available to each full-time student during the academic year, as described completely in the Undergraduate *Bulletin*, but covers only *six days* of hospitalization in each term of Summer Session residence.

With the exceptions noted below, this service, under the direction of the University Physician, and with the cooperation of the staff of Duke Hospital, furnishes full medical and surgical care, drugs, dress-

ings, x-ray work, and ward, but not special nursing, for any acute illness or injury, at no additional cost beyond the University fee for each term of residence or any shorter period. The cost of braces and necessary orthopedic appliances and of blood, as well as special nursing, must be borne by the student. A charge for meals ($1.80 per day) will be made while the student is in the Hospital. All necessary telephone and telegraph charges will be borne by the student. If students have insurance providing hospitalization, surgical or medical benefits, these benefits shall be applied to the cost of their medical care. Refraction of eyes, treatment of teeth, and of all chronic and pre-existing conditions such as diseased tonsils, hernias, elective surgery, chronic skin conditions, endocrine disturbances, etc., or accidents or illness occurring during vacation or while off the campus are not included in this service.

No illness is treated in dormitory or other rooms occupied by students. Students needing treatment for minor medical or surgical conditions have the facilities of the Student Health Office in the Hospital between 9:00 a.m. and 4:00 p.m. on week days and from 9:00 a.m. until 12:00 noon on Saturdays. Emergency room care is available on Saturday afternoons, Sundays, and the 4th of July holiday. For admission to the Hospital, or for x-ray and consultation services, a student must present the 1968 Summer Session Student Identification Card as evidence that he is matriculated in the Summer Session and entitled to hospitalization. Students who register for 3 semester hours' credit, or for at least 1 hour of research, are entitled to medical care without charge.

Appointments Office

The Appointments Office is maintained in Page Building the year around. The services of this Office are available without charge to students and teachers registered for a degree in Duke University and to school officials who may be seeking the services of new teachers. Students interested in securing employment through the Appointments Office should register with this Office.

The University Counseling Center

The University maintains a University Counseling Center which provides a centralized program of educational, vocational, and personal counseling for students. This confidential counseling service on problems of personal, social, educational, and vocational adjustment is provided without cost to students enrolled at the University. In addition, the Center administers special group testing programs for University schools and departments and serves as the local testing center for a wide variety of national testing programs. The Center also carries on programs of research in the field of measurement and counseling. Although the counseling, testing, and research services of the Center are designed primarily to meet the needs of the students, the faculty, and the staff of Duke University, these services are made available to individuals and organizations outside the University as its facilities permit. Requests for

further information should be addressed to the Director, University Counseling Center, Duke Station, Durham, North Carolina.

Student Activities

Religious Life

The Chapel, home of Duke University Church, interdenominational, is open all summer. The Church encourages the cultivation of the spiritual and moral life of students through participation in the service of worship which is held each Sunday morning at nine-thirty o'clock. The pulpit is occupied by a regular University preacher, or a special visiting preacher. Choral music for these services is provided by a volunteer student choir.

Recreation and Activities

The Summer Session will provide a varied program of entertainment and recreation. These plans include movies, presented once weekly by Quadrangle Pictures, weekly summer dances and open house social evenings with games for those who do not care to dance. Tours to areas of interest can be arranged for week-ends. Both the mountains and the seashore are easily accessible. Adequate facilities are available for those interested in swimming, tennis, and other sports. State clubs organized for the summer play an active part in all social activities.

Publications

During the Summer Session the University will publish each Saturday *The Duke University Calendar*, an official calendar announcing events—academic, social and recreational—of the following week. This calendar also includes official notices concerning academic requirements. Students are expected therefore to read the *Calendar* regularly.

Conduct of Students

Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct.

The University wishes to emphasize its policy that all students are subject to the rules and regulations of the University as currently in effect or from time to time put into effect by the appropriate authorities of the University.

Any student, in accepting admission, indicates his willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the University.

Admission

Students in the following categories may be admitted to the Duke University Summer Session:

1. Graduates and undergraduates who are presently enrolled and in good standing in Duke University.
2. Graduates and undergraduates who have been formally admitted, or re-admitted, to Duke University.
3. Students who are currently in good standing at their respective institution and who have approval by the proper authority to take and transfer credits earned in the Duke Summer Session.
4. Teachers in service with or without the Bachelor's degree who wish to earn credits for certification purposes.

Admission to specific courses offered in the Summer Session is governed by the student's academic status (freshman, sophomore, junior, senior, graduate, special or unclassified) and by the prerequisites of the course in question.

Students in Residence at Duke University during the Spring Semester, 1968

A Duke University student, either graduate or undergraduate, who plans to attend the Summer Session should at the time of pre-registration for the fall semester (see p. 33 for specific dates) enroll for the

desired Summer Session courses. He need *not* file with the Summer Session the application blank at the end of this *Bulletin.*

Students Not in Residence at Duke University during the Spring Semester, 1968

Undergraduates. New students seeking to enter Duke University as freshmen or as undergraduates with advanced standing, and undergraduates who wish to re-enter the University should write the Office of Admissions requesting application forms.

Undergraduates, both men and women, enrolled in other colleges and universities who desire to earn in the Duke University Summer Session credits which are to be transferred to their own institutions should apply directly to the Director of the Summer Session, Duke University, on the application form at the end of this *Bulletin.* They should give accurately and clearly all information called for on the application form.

Graduates. Students with graduate standing and teachers in service with or without the Bachelor's degree who wish to earn credits toward the renewal or the advancement of their certificate and who do not wish to become candidates for a degree at Duke University should apply to the Director of the Summer Session on the application form at the end of this *Bulletin.*

Graduate students who are seeking admission to the Graduate School of Arts and Sciences and those who have been admitted to the Graduate School must apply to the Director of the Summer Session on the application form at the end of this *Bulletin.* Those who are seeking admission to the Graduate School *must also file* Graduate School application forms which may be secured by writing to the Dean of the Graduate School, Duke University, Durham, North Carolina.

Students Not Seeking Admission to the Graduate School. Any student who holds an A.B. or B.S. degree and who does not intend to earn an advanced degree at Duke University but who desires graduate work for professional or other reasons should apply to the Director of the Summer Session for admission as an unclassified student. Credit earned by an unclassified student will serve all usual purposes except that it will not count toward an advanced degree at Duke University.

Students Seeking Admission to the Graduate School. Admission may be granted to a student who has received an A.B. or B.S. degree from an accredited institution after a four-year course of study. The undergraduate record should be well rounded and of such quality as to give evidence of real capacity for success in graduate study. A student who seeks admission should (1) secure an application blank from the Graduate School and promptly return it with the required information, (2) have mailed

directly from the registrar of each college he has attended to the Dean of the Graduate School at Duke University two copies of an official transcript of all his undergraduate or graduate work, (3) have mailed to the same official at least two, and preferably three, letters of recommendation from persons best qualified to appraise his capacity for graduate study. Special forms will be provided.

As additional evidence of capability scores on the Graduate Record Examination, particularly the Aptitude Test, and on the Miller Analogies Test are strongly recommended in all departments and must be submitted if either test has been taken. Scores on the Graduate Record Examination may be requested of any applicant whose record is marginal and must be submitted by all applicants for a fellowship. Departments that require scores of all applicants are listed below:

Departments	*Graduate Record Examination*		*Miller Analogies Test*
	Aptitude	*Advanced*	
Anatomy	×	×	
Biochemistry	×	×	
Botany	×	×	
Chemistry	×	×	
Economics	×	×	
English	×	×	
Forestry	×		
Geology	×		
Germanic Languages	×		
History	×		
Mathematics	×		
Microbiology	×	×	
Pathology	×		
Philosophy	×	×	×[1]
Physiology	×	×	×
Psychology	×		
Political Science	×		
Religion	×		
Romance Languages	×	×	
Sociology	×	×	
Zoology	×	×	×[1]

[1] Either GRE or MAT.

(Information on times and places of Graduate Record Examinations can be provided at the applicant's college or by the Educational Testing Service, 20 Nassau Street, Princeton, New Jersey.)

So that applications for admission to the Graduate School for summer work may be given full consideration, the student must submit all required documents to the Dean of the Graduate School at least ONE MONTH before the date of intended registration. No student may register with the Graduate School until his application has been completed and admission has been granted.

Postdoctoral Scholars

Application for these postdoctoral research privileges must be made in advance by letter to the Director of the Summer Session giving the applicant's present position, the specific field of his research interest, and the dates during which he desires to be in residence. Approved applicants will be accepted subject to the availability of library and of dormitory space.

Admission to Degree Candidacy

Credits earned during the Summer Session may be applied toward the requirements of a degree.

Undergraduates. A student seeking to enroll as a candidate for the Bachelor's degree from one of the colleges of Duke University must meet the entrance requirements set forth in the *Bulletin of Undergraduate Instruction* and be accepted by the Director of Admissions. This *Bulletin* may be secured by writing the Office of Admissions, Duke University.

Graduates. A student seeking to enroll as a candidate for one of the advanced degrees offered by the Graduate School of Arts and Sciences of Duke University must meet the requirements set forth in the *Graduate School Bulletin.* This *Bulletin* may be secured by writing to the Office of the Graduate School of Arts and Sciences.



Financial Information

Fees and Expenses

Fees

The University Fee. This fee, which covers registration, tuition, and medical care, is $47.00 per semester hour for undergraduates, $47.00 per unit for the Graduate School. Special fees have been established for:

1. Teachers in full-time service in elementary and secondary schools: $25.00 per semester hour.
2. Divinity School students approved by the Dean of that School: $23.50 per semester hour.

Laboratory Fees. For Marine Laboratory investigators' research table fees, see the Marine Laboratory *Bulletin.*

Medical Mycology Fee. This fee of $100.00 replaces the University fee.

Master's Degree Summer Session Fee. A Master's candidate who submits his thesis when not registered for at least the 1-unit research-residence fee is required to pay a 1-unit fee of $47.00.

Auditing Fees. (See p. 35 for definition.) These fees are as follows:

1. Students registered for a full course program may audit non-laboratory courses (with the permission of the Director) at no extra charge.

2. Students carrying less than a full course program may be granted permission to audit a course or courses on payment of half the University fee per semester hour audited: $23.50.

Late Registration Fee. Students who fail to register prior to the first class day of a given course will pay an extra fee of $5.00.

Fee for Course Changes. Course changes other than those required by the University will be made only on payment of an extra fee of $1.00 per change.

Fee for Make-up Final Examination. This fee is $5.00.

Refund of Fees. Fees will be refunded under the following circumstances:

1. When applications for withdrawal are received by the Director of the Summer Session before the close of registration on registration day, full fees will be refunded.
2. When applications for withdrawal are received by the Director of the Summer Session during the first four class days of a given term, 80 per cent of the fees will be refunded.
3. When applications for withdrawal are received by the Director of the Summer Session after the fourth class day, there will be no refund of fees.

Residence Halls Rates

Air-Conditioned*

Single—	Double—
10 weeks—$170.00	10 weeks—$125.00
9 weeks— 153.00	9 weeks— 112.50
8 weeks— 136.00	8 weeks— 100.00
5 weeks— 85.00	5 weeks— 62.50
4 weeks— 68.00	4 weeks— 50.00
1 week — 17.00	1 week — 12.50

* Not available for graduate men. Space limited for graduate women.

Non-Air-Conditioned

Single—	Double—	Double Rooms used as Singles—
10 weeks—$110.00	10 weeks—$ 87.50	10 weeks—$140.00
9 weeks— 99.00	9 weeks— 78.75	9 weeks— 126.00
8 weeks— 88.00	8 weeks— 70.00	8 weeks— 112.00
5 weeks— 55.00	5 weeks— 43.75	5 weeks— 70.00
4 weeks— 44.00	4 weeks— 35.00	4 weeks— 56.00
1 week — 11.00	1 week — 8.75	1 week — 14.00

Town House Apartments (Graduate Women and Families only)

$18.00 each student per week (3 to an apartment)
$27.00 each student per week (2 to an apartment)
$54.00 Family Use
(Not assigned for less than 4 weeks)

Duke University Marine Laboratory

5 weeks—$45.00 Per Person

Application for room or apartment reservations at Duke University, accompanied by the full amount of the room rent for the application period, should be made to Office of Housing Management, Duke University, Duke Station, Durham, North Carolina. Rooms and spaces in apartments will be reserved in the order in which applications are received, and on certification of admission by the Summer Session Director. Notification of assignment to rooms will be made about May 30 for the First Term; about July 10 for the Second Term.

Rooms and apartments are available to applicants twenty-four hours prior to the registration for a specific term of the Summer Session. A room or apartment is to be vacated by the occupant within twenty-four hours after his final examination or agreement period. Any period of occupancy, other than for a specific term of the Summer Session, must be arranged with the Office of Housing Management, House D, Room 101R, Duke University.

Refund of Room Rent. Refunds are made under the following circumstances:

1. When notification for room cancellation is received by the Office of Housing Management on or before fifteen (15) days prior to the registration date of the summer session term, full room rent will be refunded.
2. When notification for room cancellation is received between the fifteen (15) days prior to registration date and the first four class days, 80 per cent of the room rent will be refunded.
3. When notification for room cancellation is received after the first four days of a summer session term, 70 per cent of the room rent for the unused period will be refunded.

Applicants should be sure to express their preference as to roommates, if they have a preference. If no preference of roommate is expressed the Office of Housing Management will assign a roommate; however, this office does not assume responsibility in this matter.

Estimated Cost of One Term of Summer Session

University Fee, 6 s.h. $282.00
(Teachers, elementary and secondary, in full-time service pay $150.00)

Dormitory Rooms (Double room, 5 weeks)	43.75*
Meals (Cafeteria selective; average per day $2.50)	90.00*
Books and Class Materials $7.00 to $10.00	8.50*
Miscellaneous (laundry, etc.)	12.00*
Total (elementary and secondary teachers in full-time service deduct $132.00)	$436.25

* Approximate costs which will vary according to individual tastes and needs.

Student Aid

Special Fees to Teachers

Teachers in full-time service in elementary and in secondary schools, who are accepted by the Summer Session, pay only $25.00 per semester hour. Teachers on leave of absence from their schools and teachers not currently employed are not eligible for this special fee.

Scholarships for Public School Personnel

Duke University will offer thirty-two special scholarships of $175.00 each to high school and elementary teachers on a competitive basis (not by a written examination) for the Summer Session of 1968. This scholarship program is designed to encourage teachers to begin or to continue their graduate studies leading to the A.M., M.Ed., or M.A. in Teaching degree.

Duke University will again offer five special scholarships of $200.00 each to high school and elementary administrators and supervisors. This scholarship program is designed to encourage principals and supervisors to continue their graduate studies leading to advanced degrees.

Although successful applicants for the scholarships will not be required to become candidates for a degree, they must qualify for and receive admission to the Graduate School of Arts and Sciences.

All applications with supporting documents must be submitted by April 1, 1968. Selection and appointment of scholars will be completed by May 1, 1968.

Application blanks and complete information may be obtained from the Director of the Summer Session, Duke University, Durham, North Carolina.

Loans

A number of loan funds have been established for the benefit of the students of Duke University. Several of these funds are available to students enrolled in the Summer Session. Students enrolled in the Sum-

mer Session *only* are not eligible. These funds are administered through a committee of officers of the University.

The Committee, in approving loans, selects those students who, from the standpoint of character, scholastic attainment, and degree of financial need, are deserving of consideration.

Applicants for loans should make application to the Manager, Student Loan Office, Duke University. All applications must be initiated during the first week of each term. The granting or withholding of a loan is a matter entirely within the discretion of the Student Loan Committee. A student is expected to use all other possible means of securing financial assistance before applying for aid from a loan fund.

National Defense Education Act Loans. A limited number of loans may be made, under the provisions of the National Defense Education Act of 1958, to students in the Summer Session who have been regularly enrolled in the University prior to the Summer Session. A student who is enrolled for study in the Summer Session *only* is not eligible for consideration. Students pursuing the M.A.T. Cooperative Program are not eligible. Inquiries concerning opportunities available under this program should be addressed to the Manager, Student Loan Office, Duke University.

Remission of Tuition

Children of ministers who are members of the North Carolina and Western North Carolina Conferences of the Methodist Church are entitled to a remission of the tuition charge as are the children of ministers of all faiths residing in Durham County, North Carolina. This consideration is given only to the children of resident members of the two North Carolina conferences who are giving their full time to religious work. Only those students enrolled in a regular undergraduate program leading to a baccalaureate degree from Duke University are entitled to this benefit. Students in this group are entitled to a maximum of eight semesters of free tuition at the undergraduate level. Application for this benefit should be made to the Director of Financial Aid, Duke University.

Tuition Grants

Tuition grants are available to children of qualified staff members of Duke University. Information regarding the tuition grant program may be obtained by writing to the Director of Financial Aid, Duke University.

University Registration and Regulations

Definition of Terms

Registration. A student has completed registration for the Summer Session when:

1. His course program has been written and approved by the dean of the school or college in which he is enrolled or by the Director of the Summer Session in the case of the special or unclassified student.
2. Summer Session forms have been completed properly by the student in the Summer Session Office.
3. Summer Session University fees have been paid. A place in a course cannot be assured until fees have been paid. Tuition bills are not sent to the student's home.

Pre-enrollment. The term pre-enrollment refers only to the writing of the course program and its approval by the proper authority or by the Director of the Summer Session in the case of the special or unclassified student. *Pre-enrollment alone does not constitute registration.*

General Registration

Classes Beginning June 12. All Summer Session students whose classes begin on June 12, Term I, who *do not* complete registration in the Sum-

mer Session Office, 119 Allen Building, on or before June 5 *must* present themselves at general registration in the Summer Session Office, 119 Allen Building, on June 11 to register. Students will register during 30-minute periods alphabetically according to *surname* as indicated in the following table.

Time	*Registrants (Surname)*
8:30– 9:00	A–B
9:00– 9:30	C–E
9:30–10:00	F–H
10:00–10:30	I–L
10:30–11:00	Mc–N
11:00–11:30	O–P
11:30–12:00	Q–R
12:00–12:30	S–T
12:30– 1:00	U–Z

Classes Beginning June 18. All Summer Session students whose classes begin on June 18, Term I, must complete registration in the Summer Session Office, 119 Allen Building, on or before June 17.

Classes Beginning July 22. All Summer Session students who wish to register for courses offered during Term II or for research during Term II may register in the Summer Session Office on July 8 through July 18. All students who *do not* register for second term during this period *must* register in the Summer Session Office, 119 Allen Building, on July 19, between 8:30 a.m. and 1:00 p.m.

Classes Beginning on Other Dates. All Summer Session students registering for courses beginning on dates other than those specified above must complete registration in the Summer Session Office *before* the date on which their classes begin. *Registration on the day on which classes are scheduled to begin will be considered late registration.*

Late Registration

Any student who fails to register on or before the dates specified in the preceding paragraphs will be charged a fee of $5.00 for late registration. No student will be permitted to register for a 3 semester hour course after the third class day (June 14, Term I; July 23, Term II); a 4 semester hour course after the second class day (June 19, Term I; July 23, Term II). Changes in courses other than those required by the University will require a payment of $1.00 for each change made. All changes must be approved by the dean of the school or college in which the student is enrolled or, in the case of the special or unclassified student, by the Director of the Summer Session. Changes in courses

may be made within the first three class days. These registration rules are enforced rigidly.

Since Summer Session courses present a program of study in more concentrated and rapid form than in the regular semesters, students are advised to register on time and to be present at all class sessions.

Advance Registration

Students in Residence at Duke University during the Spring Semester, 1968

Writing Course Programs in the Schools and Colleges. Students in residence at Duke University during the Spring Semester, 1968, both graduate and undergraduate, who plan to enroll for courses offered in the 1968 Summer Session or to carry on research during the period of the Summer Session will write course programs and have them approved in their respective schools or colleges during the week of pre-registration, April 8-11, 1968. Graduate students will pre-register on April 10-11. Divinity School students will pre-register on April 12.

Advance Registration in the Summer Session Office. Students in residence whose course programs have been written and approved by their respective colleges on the dates indicated above may complete their registration in the Summer Session Office, 119 Allen Building, on the following dates:

Graduate and undergraduate students—May 10 through June 5

Registration in the Summer Session Office includes:

1. Completion of various Summer Session forms.
2. Payment of University fees.

A student who registers with the Summer Session Office during this period will not be required to be present at general registration on June 11. He will begin his class work on the date his classes are scheduled to begin: June 12 or June 18.

Students Not in Residence at Duke University during the Spring Semester, 1968

Advance Registration by Mail. Students not in residence at Duke University during the Spring Semester, 1968—new undergraduate students seeking to enter as degree candidates, graduate students who are not candidates for an advanced degree at Duke University, graduate and undergraduate students of other colleges and universities desiring to earn credits for transfer, public school teachers and college teachers (not advanced degree candidates)—may register by mail. Advance registration by mail includes:

1. Completion in full of the application form at the end of this *Bulletin*.
2. Admission to the Summer Session by the Director of the Summer Session and, in the case of students seeking to enter Duke University as degree candidates, admission by the Admission Directors to the school or college of Duke University concerned.
3. Completion in full and return of forms required by the Summer Session Office by June 5.
4. Payment of University fees by June 5. A student may *pre-enroll* by mail without paying the University fees but he *cannot register in advance* without doing so.

Students who complete registration by mail on or before June 5 need not be present at the general registration on June 11.

Degree Candidate Graduate Students Not in Residence during the Spring Semester, 1968. All graduate students not in residence during the Spring Semester, 1968, who are candidates for an advanced degree in the Graduate School of Arts and Sciences of Duke University *must* present themselves for registration in the Summer Session Office, 119 Allen Building, on June 11. They cannot complete registration by mail because:

1. Their program of study for the summer must be approved by their Director of Graduate Studies.
2. Their course programs must be written and approved by the Graduate School of Arts and Sciences.

These students may pre-enroll by mail with the Summer Session Office and may pay their fees in advance, but they cannot complete their registration.

Registration of Graduate Students

Graduate students in residence during the spring semester will preregister for either or both terms of the Summer Session on April 10-11. Other students who have been admitted to the Graduate School should present themselves for registration at the official registration period, June 11 for the first term, and July 19 for the second term. They are required to register both with the Summer Session and the Graduate School.

Graduate students resident in the spring semester who intend to remain in residence during either or both of the two Summer Session terms without registering for course work or research must register for one unit (one semester hour) to cover the cost of medical care and the use of University facilities. This one unit (one semester hour) of registration will entitle students to use the Student Health Service and University facilities during both terms of the Summer Session. The Master's candi-

date who has completed all requirements except submission of the thesis and who so registers is not charged any separate fee for submitting the thesis.

Academic Regulations

Kinds of Course Enrollment

Summer Session courses may be taken for "credit" or for "non-credit" or may be "audited." A student's program may be exclusively in one of these categories, or may combine any two of them or all three. Students taking a full or partial program for "credit" may enroll as auditors or as non-credit students in any number of additional courses.

Credit. The Summer Session term "credit" does not mean degree credit at Duke University unless the student has been admitted as a degree candidate by one of the colleges or schools of the University. A student taking a course for credit is expected to do all the work required and to take the final examination, and he will receive a grade. G.I. Bill benefits are available only to those veterans who enroll for credit.

Non-credit. "Non-credit" enrollment is available to the student who wishes the privilege of participating in class discussions, exercises, and the laboratory assignments but does not wish to take the examinations, either mid-term or final. A "non-credit" student may do as much of the work of the course as he desires, but he may not take the final examination and he will not receive a grade. Full fees of $47.00 per semester hour are required in "non-credit" enrollment.

Audit. An auditor is entitled to listen to lectures and class discussions, but he may not participate in discussions or take examinations. Students may not enroll as auditors in laboratory courses. A student carrying a full program for credit may be given permission to audit as many courses as he desires without additional fees. Students carrying less than a full program for credit may secure permission to audit but are required to pay the auditing fee of $23.50 per semester hour.

Credits

The Summer Session courses are of the same quality and credit values as courses in the regular semester. Credit earned in the Summer Session is in terms of semester hours. The majority of Summer Session courses carry 3 semester hours credit and require one term in residence. A limited number of basic courses in the sciences carry 4 s.h. credit (Chemistry, Geology, Physics, Zoology).

Credits for Transfer. A student desiring either graduate or undergraduate credits transferred from Duke University to his university or college

as degree credit must request from the Director of the Summer Session, Duke University, a "Course Approval Form" to be completed by the student's Dean or Registrar and returned to the Director of the Summer Session, Duke University.

Transfer of Graduate Credits. Under certain circumstances a maximum credit of 6 units in a Master's degree program may be allowed for graduate courses completed elsewhere. Approval for the transfer of credits will not be given until the student has spent one semester or two terms in residence. The acceptance of credit up to this amount will not reduce the minimum period of full-time registered residence at Duke University. In no case will credit be allowed for extension or correspondence courses.

With the approval of both the student's major department and the Dean of the Graduate School, a student who is granted such transfer for credit may be permitted to register for as much as 12 units for thesis research instead of the usual 6 units. Or he may be permitted to fill out his schedule with as much as 6 semester hours of further undergraduate training or 6 semester hours of required language courses on the undergraduate level.

For regulations concerning applying graduate credit earned elsewhere to a graduate program here, consult the Graduate School *Bulletin.*

See page 11 for information concerning reciprocal agreement with the University of North Carolina.

Professional Credits Toward Teacher's Certificates. Professional credits toward teacher's certificates are granted by the various state boards of education, each in accordance with its own carefully planned rules. Teachers in service, before enrolling for certification credit, should consult the rules laid down by their State Board of Education. If necessary, they should send to their State Board of Education a list of the courses in which they plan to enroll and inquire whether these will be acceptable for certification credit.

Normal Course Program

The normal and maximum program for one term of the Summer Session is 6 semester hours, except in cases where students take a 4 semester hour language course. In those cases 7 semester hours per term will be allowed. The 4 semester hour courses in the sciences run for four weeks and one such course constitutes a full course program. Four semester hour courses in the sciences do not meet on Saturday.

Grading

Only a student taking a course for credit will receive a grade. The grade given represents the quality of the work done in the course.

Passed.

Undergraduate Grades	*Graduate Grades*
A—excellent	E—exceptional
B—good	G—good
C—average	S—satisfactory
D—poor but passing	

Failed. A grade of F indicates that the student has failed the course, and in order to receive credit for the course he must repeat the work in class.

Incomplete. A grade of I may be reported by the instructor if for any reason he is unable to report the final grade at the regular time. Incomplete courses must be completed before the close of the succeeding semester; otherwise the I is recorded as F, and the course must be repeated in class if the student is to receive credit for it.

Absent from Final Examination. The grade X indicates that the student was absent from the regularly scheduled examination. A student absent from examination, if the absence has been excused by the dean of the college or school in which he is enrolled or, in the case of the special or unclassified student, by the Director of the Summer Session, may receive an examination upon the payment of $5 to the Treasurer of the University. The instructor concerned arranges for the examination in cases where absences are excused. A student with an X grade who has not obtained a passing grade before the end of the semester following that in which the X was incurred is regarded as having failed in the course concerned and must repeat the work in class in order to receive credit. If a student's absence from an examination is not excused by the dean of the college or school in which he is enrolled or, in the case of the special or unclassified student, by the Director of the Summer Session, his grade for the course concerned is recorded as F.

Examinations

Final examinations in courses are held on the last two days of each term. Final examinations for short courses which occupy the student's complete program will be held on the last day of the course. The examination dates for 1968 are:

First term: July 17, 18.
Second term: August 23, 24.

Courses in science for the first term have been scheduled so that their final examination will come on July 18. The science courses which begin July 22 and run for four weeks will have their final examination on August 16. The University has no provision for giving examination *in absentia.* Students absent from examinations for valid reasons are permitted a

liberal extension of time to return to the University for completion of credit.

Dropping of Courses

If a student drops a course without permission from the dean of the school or college in which he is enrolled or, in the case of the special or unclassified student, the Director of the Summer Session, the grade for that course is recorded as F. If he drops a course with permission, the grade for that course is F unless, in the judgment of the dean or director, circumstances do not justify this penalty.

Withdrawal from the Summer Session

If a student wishes to withdraw from the Summer Session, he must notify both the dean of the school or college in which he is registered and the Director of the Summer Session.

Other Regulations

Motor Vehicle Registration

Students enrolled in the Summer Session must register their motor vehicles with the Traffic Office, 08 Social Science, West Campus.



Courses of Instruction

Eligibility for Course Enrollment

Courses numbered 1-49 are primarily for freshmen, or freshmen and sophomores. Courses numbered 50-99 are ordinarily for sophomores, or sophomores and juniors. Courses numbered 100-199 are designed for juniors and seniors. Courses numbered 200-299 are planned for seniors and graduates. Courses numbered 300 up admit graduate students only. Courses numbered from 200 up are limited in enrollment to 25 students.

The amount of credit for each course is specified in semester hours following the listing of the course. For a description of each course and for the time it is offered, consult the *Bulletin of the Summer Session.*

Minimum Enrollment Required for Courses

All courses are offered subject to minimum enrollments. The University reserves the right to withdraw undergraduate courses in which fewer than twelve students enroll, senior-graduate courses numbered 200-299 in which fewer than ten students enroll, and graduate courses and seminars numbered 300 or above in which fewer than six students enroll. In withdrawing a course, the University attempts to avoid undue hardships on students. Sometimes, therefore, courses are offered in spite of small enrollments. Courses not listed will be given when a demand develops and an instructor is available.

Department Officers and Regulations

Departments offering Summer Session programs are listed alphabetically. Under each department is given the name of the chairman, of the director of graduate studies, and of the director of undergraduate studies. Where departments have set up special regulations for admission to candidacy for the Master's degree, these are included.

Anatomy

Professor J. David Robertson, *Chairman* (401 Davison, West Campus); Professor John, Buettner-Janusch, *Director of Graduate Studies* (Old Laundry Building, West Campus)

First Term

M151. *Anatomy of the Lower Extremities as it Relates to Locomotion.* 3 s. h. Bassett

Second Term

M151. *Anatomy of the Lower Extremities as it Relates to Locomotion.* 3 s.h. Bassett

Botany

Professor Terry W. Johnson, Jr., *Chairman* (354 Biological Sciences Building, West Campus); Associate Professor Robert L. Wilbur, *Director of Graduate Studies* (265 Biological Sciences Building, West Campus); Assistant Professor Richard A. White, *Director of Undergraduate Studies* (371 Biological Sciences Building, West Campus)

Students admitted to candidacy for an advanced degree in botany should have completed a minimum of 12 semester hours of courses in botany (or biology) beyond an elementary course, and related work in biological sciences. Students who have not yet had the minimum hours, however, may enter higher courses by permission of the instructor, if he is convinced that they can carry the work for undergraduate credit, and may count such work toward hours necessary for candidacy.

First Term (Duke Campus)

225. *Special Problems.* Hours to be arranged. Staff
359. *Research.* Hours to be arranged. Staff

First Term (Duke Marine Laboratory, Beaufort, North Carolina)

207. (Beaufort). *Marine Mycology.* 6 s.h. Johnson
225. *Special Problems.* Hours to be arranged. Johnson
359. *Research.* Hours to be arranged. Johnson

Second Term (Duke Campus)

226. *Special Problems.* Hours to be arranged. Staff
360. *Research.* Hours to be arranged. Staff

Second Term (Duke Marine Laboratory, Beaufort, North Carolina)

211. (Beaufort). *Marine Phycology.* 6 s.h. Searles
226. *Special Problems.* Hours to be arranged. Searles
360. *Research.* Hours to be arranged. Searles

Business Administration

Professor Louis D. Volpp, *Chairman* (302 Social Science Building, West Campus); Professor Thomas F. Keller, *Director of Undergraduate Studies* (234 Social Science Building, West Campus)

First Term

138. *Business Statistics.* 3 s.h. Vernon
146. *Managerial Economics.* No credit for those who have completed Economics 149. 3 s.h. Vernon

Chemistry

Professor Charles K. Bradsher, *Chairman* (114 Chemistry Building, West Campus); Professor Louis D. Quin, *Director of Graduate Studies* (09 Chemistry Building, West Campus); Associate Professor James F. Bonk, *Director of Undergraduate Studies* (107 Chemistry Building, West Campus)

All classes in Chemistry, Term I, will begin on June 18 and continue through July 18. All classes in Chemistry, Term II, will begin on July 22 and continue through August 16. Students who wish to avoid paying a late registration fee must have their registration completed in advance of these dates. For registration dates see *General Registration* on page 31 of this *Bulletin.* (Chemistry classes will not meet on Saturdays.)

First Term

1. *General Inorganic Chemistry.* 4 s.h. Jones

61. *Fundamentals of Analytical Chemistry.* Prerequisites: Chemistry 1-2 and Mathematics 21 or equivalent. 4 s.h. Toren

151. *Organic Chemistry.* Prerequisite: Chemistry 61. 4 s.h. Brown

275. *Thesis Research.* (Available Terms I and II.) 2 to 8 s.h.

Second Term

2. *General Inorganic Chemistry.* Prerequisite: Chemistry 1. 4 s.h. Bonk

152. *Organic Chemistry.* Prerequisite: Chemistry 151. 4 s.h. Wilder

Classical Studies

Professor Lawrence Richardson, Jr., *Chairman* (312 Carr Building, East Campus); Assistant Professor D. Keith Stanley, *Director of Undergraduate Studies* (111 Language Building, West Campus)

Greek

First Term

121. *Greek Literature: Homer—Iliad and Odyssey.* 3 s.h. Truesdale

122. *Greek Literature: The Tragic Poets.* 3 s.h. Truesdale

Comparative Literature

First Term

191. *Independent Study.* Open only to qualified students in the junior year, by permission of the Department. 3 s.h. Salinger

193. *Independent Study.* Open only to qualified students in the senior year, by permission of the Department. 3 s.h. Salinger

205. *Foundations of Twentieth-Century European Literature.* 3 s.h. Salinger

Divinity School

Professor Robert E. Cushman, *Dean of the Divinity School* (124 Divinity School, West Campus)

First Term

124. (DS). *Moral Theology in the Twentieth Century.* 3 s.h. Smith
209 (DS). *Old Testament Theology.* Prerequisite O. T. 11-12 or equivalent. 3 s.h. Tucker
277A. *Clinical Pastoral Education II.* Permission of Director of Studies in Pastoral Care required. 4 s.h. Staff

Economics

Professor Robert S. Smith, *Chairman* (306 Social Science Building, West Campus); Professor William P. Yohe, *Director of Graduate Studies* (313 Social Science Building, West Campus); Professor Juanita M. Kreps, *Director of Undergraduate Studies* (302 Social Science Building, West Campus)

First Term

51. *Principles of Economics.* Credit for Ec. 51 will not be given until Ec. 52 has been completed. 3 s.h. Finger
287. *Public Finance.* 3 s.h. Gillis

Second Term

52. *Principles of Economics.* 3 s.h. Calkins
149. *The Theory of the Firm.* 3 s.h. Yohe
153. *Money and Banking.* 3 s.h. Yohe

Education

Professor William H. Cartwright, *Chairman* (08D West Duke Building, East Campus); Professor Edward C. Bolmeier, *Director of Graduate Studies* (08B West Duke Building, East Campus); Professor W. A. Stumpf, *Director of Undergraduate Studies* (09A West Duke Building, East Campus)

Duke University is accredited by the National Council for Accreditation of Teacher Education for the preparation of elementary and secondary school teachers and school service personnel with the Doctor's degree as the highest degree approved.

For admission to candidacy for the Master of Arts (A.M.) degree with major in Education, or for the Master of Education (M.Ed.) degree, students must, in addition to meeting the general requirements for admission to the Graduate School, meet the following specific requirements: Credit for (1) eighteen semester hours of acceptable prior work in Educa-

tion and (2) twelve semester hours of acceptable prior work in a minor field. If Psychology, Sociology, Economics, or Political Science is chosen for the minor, six semester hours of work completed after entering the junior year in college will be accepted.

The degree of Master of Arts is available in the divisions of School Administration and Supervision, Secondary Education, Elementary Education, and Guidance and Counseling. Every candidate for the Master of Arts degree in the Department should elect at least twelve semester hours in one of these divisions in which he plans to write his thesis and the remainder of his work, including the six semester hours in his minor, with the approval of the proper division adviser. The degree of Master of Education is available in the divisions of School Administration and Supervision, Secondary Education, Elementary Education and the Teaching of Emotionally Disturbed Children. Mr. Bolmeier, Mr. Hurlburt, Mr. Sublett, and Mr. Stumpf are advisers to students in School Administration and Supervision; Mr. Petty, Mr. Sublett and Mr. J. Johnson are advisers in Elementary Education; Mr. Bolmeier, Mr. Cartwright, Mr. Githens, and Mr. Shuman are advisers in Secondary Education; and Mr. Colver, Mr. Gehman, Mr. Ballantyne, and Mr. Weitz are advisers in Guidance and Counseling. Mr. Cartwright and Mr. Hurlburt are advisers for the Master of Arts in Teaching program. Candidates for the Master of Arts, Master of Education, or Master of Arts in Teaching degree should read with special care the regulations of the Graduate School as set forth on pages 5-9. Candidates for the Master of Arts in the field of guidance should consult the special brochure on guidance available from the Dean of the Graduate School.

It is the intention of the Department to make available to degree candidates all courses ordinarily required for certification as graduate teachers, counselors, principals and superintendents. These courses will normally be offered at least once every three years.

First Term

201. *Teaching and Supervision of Arithmetic.* Designed for teachers and supervisors in the elementary school. (June 12-28) 3 s.h. Petty

207. *Social History of Twentieth-Century American Education.* 3 s.h. C. Johnson

211. *The Problem Child (also Psychology 211).* 3 s.h. Mecke

213. *Elementary-School Organization and Administration.* 3 s.h. Sublett

232. *Supervision of Instruction.* 3 s.h. Hurlburt

233. *Improvement of Instruction in English.* 3 s.h. Shuman

237. *Literature for Adolescents.* 3 s.h. Shuman

243. *Personality Dynamics.* Prerequisite: 6 hours of psychology or educational psychology. 3 s.h. S. Gehman

246. *The Teaching of Mathematics.* (June 12-29) 3 s.h. Reynolds

250, 251. *Teaching Emotionally Disturbed Children: Internship.* 3 s.h. each. S. Gehman

253. *School Law.* 3 s.h. Bolmeier

276. *The Teaching of High-School Science.* 3 s.h. Githens

315. *Seminar in Secondary-School Teaching.* For students without previous internship credit, this course must be accompanied by Education 216. 3 s.h. Hurlburt

339. *Seminar in Curriculum.* 3 s.h. Sublett

Second Term

203. *Principles of School Administration.* 3 s.h. Stumpf

204. *The School as an Institution.* 3 s.h. Martin

210. *Introduction to Educational Research.* 3 s.h. Katzenmeyer

217. *The Psychological Principles of Education.* 3 s.h. Katzenmeyer

225. *The Teaching of History and the Social Studies.* 3 s.h. Cartwright

226. *Teaching Reading in the Elementary School.* 3 s.h. J. Johnson

234. *Secondary-School Organization and Administration.* 3 s.h. Bolmeier

238. *Content, Supervision, and Administration of Reading Programs.* For supervisors, teachers, and administrators. 3 s.h. J. Johnson

290. *Administration of School Property.* 3 s.h. Stumpf
For teachers, principals, and superintendents.

Engineering

Professor J. L. Meriam, *Dean of the School of Engineering* (136 Engineering Building, West Campus); Associate Professor E. K. Kraybill, *Associate Dean of Undergraduate Study* (136 Engineering Building, West Campus)

First Term

C.E. 365. **Advanced Topics in Civil Engineering.* 1 to 3 s.h. Graduate Staff

C.E. 399. **Special Readings in Civil Engineering.* Prerequisite: approval of the Director of Graduate Studies. 1 to 3 s.h. Graduate Staff

E.E. 265. **Advanced Topics in Electrical Engineering.* Prerequisite: approval of the Director of Graduate Studies and of instructor under whom work will be done. 1 to 3 s.h. Graduate Staff

E.E. 399. **Special Readings in Electrical Engineering.* Prerequisite: approval of the Director of Graduate Studies. 1 to 3 s.h. Graduate Staff

*Offered only upon sufficient demand; enrollment limited.

M.E. 197–198. **Projects in Mechanical Engineering.* Prerequisite: 3.0 average and senior standing. 1-6 s.h. Staff

M.E. 265. **Advanced Topics in Mechanical Engineering.* Prerequisite: approval of the Director of Graduate Studies and of instructor under whom work will be done. 1 to 3 s.h. Graduate Staff

M.E. 399. **Special Readings in Mechanical Engineering.* Prerequisite: approval of the Director of Graduate Studies. 1 to 3 s.h. Graduate Staff

English

Professor Oliver Ferguson, *Chairman* (325 Allen Building, West Campus); Professor Louis Budd, *Acting Director of Graduate Studies* (319 Allen Building, West Campus); Professor George Williams, *Director of Undergraduate Studies* (402 Allen Building, West Campus)

Candidates for the Master's degree in English are expected to have had at least eighteen semester hours in undergraduate courses above the sophomore level. The Department may also require additional courses if the work of the student in his first term indicates inadequate preparation.

First Term

55. *Representative British Writers.* 3 s.h. Mellown
57. *Representative American Writers.* 3 s.h. Gerber
129. *The English Novel in the Twentieth Century.* 3 s.h. Smith
219. *The Eighteenth Century.* 3 s.h. Ferguson
235. *American Literature Since 1920.* 3 s.h. Strandberg
262. *English Literature of the Twentieth Century.* 3 s.h. Smith
352. *Bibliography and Methods of Research in American Literature.* 3 s.h. Gohdes

Second Term

56. *Representative British Writers.* 3 s.h. Monsman
58. *Representative American Writers.* 3 s.h. Clum
208. *History of the English Language.* 3 s.h. Reiss
209. *Present-Day English.* 3 s.h. Reiss
233. *American Literature, 1865-1920.* 3 s.h. Budd
320. *Medieval Romances.* 3 s.h. van Kluyve

Forestry

Professor Robert L. Barnes, *Acting Dean of the School of Forestry* (213 Biological Sciences Building, West Campus); Professor J. G. Yoho, *Director of Graduate Studies* (104 Biological Sciences Building, West Campus)

* Offered only upon sufficient demand; enrollment limited.

Qualified students may engage in thesis research in certain branches of forestry during the Summer Session with the approval of the instructor concerned and the Dean of the School of Forestry, or of the Director of Graduate Studies in the case of work taken through the Graduate School.

357. *Research in Forestry.* Open to students whose research programs for the M.F. or D.F. degree have been approved by the Dean of the School of Forestry and the instructor responsible for directing the research and whose programs for the A.M., M.S., or Ph.D. degree have been approved by the Director of Graduate Studies and the instructor in charge. (Credits and schedule to be arranged.) June 11-August 24. 2 to 12 s.h. (Not more than one semester hour of credit per week for full-time schedule or one semester hour each two weeks for half-time schedule.) (Consult courses 301-302 in *Announcement* of School of Forestry for letter designation of branches of forestry in which research is to be conducted.) Staff

Geology

Associate Professor S. Duncan Heron, Jr., *Acting Chairman and Director of Graduate Studies* (105 Science Building, East Campus); Associate Professor William J. Furbish, *Director of Undergraduate Studies* (101 Science Building, East Campus)

The class in Geology 1, Term I, will begin on June 18 and continue through July 18. The class in Geology 2, Term II, will begin on July 22 and continue through August 16. Students who wish to avoid paying a late registration fee must have their registration completed in advance of these dates. For registration dates see *General Registration* on page 31 of this *Bulletin.* (Geology classes will not meet on Saturdays.)

First Term

1. *Physical Geology.* 4 s.h. Heron

205 (Beaufort). *Geological Oceanography.* Not open to students who have completed Geology 206. 6 s.h. Pilkey

Second Term

2. *Historical Geology.* 4 s.h. Lynts

German

Professor Herman Salinger, *Chairman and Director of Graduate Studies* (106 Language Building, West Campus); Assistant Professor A. Tilo Alt,

Director of Undergraduate Studies (102 Language Building, West Campus)

The work in German 1, 2, 63, and 64 will be coordinated with listening and oral practice in the language laboratory which students in German classes will be privileged to attend.

First Term

1. *Elementary German.* 4 s.h. Boletta

63. *Intermediate German.* Prerequisite: German 1-2, or two units of high-school German. 3 s.h. Bessent

64. *Intermediate German.* Prerequisite: German 63 which may be taken concurrently. 3 s.h. Alt

191. *Independent Study.* Open only to qualified students in the junior year, by permission of the Department. 3 s.h. Salinger

193. *Independent Study.* Open only to qualified students in the senior year, by permission of the Department. 3 s.h. Salinger

Graduate Reading Course. For graduate students only. No degree credit. Alt

Second Term

2. *Elementary German.* Prerequisite: German 1 or equivalent. 4 s.h. Klabes

Health and Physical Education

Edmund M. Cameron, *Director, Trinity College and College of Engineering* (109 Indoor Stadium, West Campus); Professor J. A. Friedrich, *Chairman, Health and Physical Education* (107 Card Gymnasium, West Campus)

First Term

PE 182. *The Administration of Health and Physical Education in Secondary Schools.* Open to juniors and seniors. 3 s.h. Davis

PE 190. *Protective Practices in Physical Education.* 3 s.h. Davis

History

Professor Joel Colton, *Chairman* (235 Allen Building, West Campus); Professor Robert F. Durden, *Director of Graduate Studies* (230 Allen Building, West Campus); Associate Professor Frederic B. M. Hollyday,

Acting Director of Undergraduate Studies (227 Allen Building, West Campus)

For admission to candidacy for a Master's degree in History, the student must present a total of twelve semester hours of prior work in History, of which at least six must be in American History if he plans to take his major work in that field. Candidates for the degrees of Master of Arts and Master of Arts in Teaching are required to complete at least three hours of seminar work and are strongly urged to enroll for this work in the second term of their attendance in the Summer Session. (See courses numbered 300 or above.)

First Term

51. *A History of European Civilization.* 3 s.h. Gillin
91. *The Development of American Democracy to 1865.* 3 s.h. Esthus
162. *History of Russia, 1917 to the Present.* 3 s.h. Lerner
216. *The Diplomatic History of the United States in the Twentieth Century.* 3 s.h. Esthus
239. *History of International Communism from Pre-Marxist Days to Present.* 3 s.h. Lerner
242. *Nationalism and Communism in the Far East.* 3 s.h. Gillin
301. *Seminar in Historical Investigation.* 3 s.h. Ferguson

Second Term

52. *A History of European Civilization.* 3 s.h. Brown
92. *The Development of American Democracy, 1865 to the Present.* 3 s.h. Leutze
116. *History of Africa since 1850.* 3 s.h. Graham
214. *The Old South, 1800-1850.* 3 s.h. Woody
217. *European International Relations, 1870-1939.* 3 s.h. Brown
302. *Seminar in Historical Investigation.* 3 s.h. Woody

Hospital Administration

Professor Charles H. Frenzel, *Director of the Graduate Program in Hospital Administration* (234B Baker House); Assistant Professor Donald S. Smith, II, *Coordinator of Graduate Studies* (234B Baker House)

Second Term

201. *History and Development of Hospitals and Other Health Agencies.* Permission of the instructor required. 3 s.h. Smith

Mathematics

Professor John H. Roberts, *Chairman* (135 Physics Building, West Campus); Professor Seth L. Warner, *Director of Graduate Studies* (135 Physics Building, West Campus); Professor Francis G. Dressel, *Director of Undergraduate Studies* (135 Physics Building, West Campus)

Graduate students are invited to consult with the Director of Graduate Studies concerning their programs.

First Term

21. *Introductory Calculus.* Prerequisite: two and one-half units of college preparatory mathematics. 3 s.h. Staff

51. *Introduction to Digital Computation.* (A fee of $8.00 is charged for this course.) Prerequisite: three units of college preparatory mathematics. 3 s.h. Smith

204. *Geometry for Teachers.* 3 s.h. Scoville

213. *Modern Algebra.* 3 s.h. Hodel

Second Term

22. *Introductory Calculus.* Prerequisite: Mathematics 21. 3 s.h. Staff

214. *Modern Algebra.* 3 s.h. Kitchen

221. *Numerical Analysis.* Prerequisite: Mathematics 63. 3 s.h. Baxley

229. *Theory of Algebraic Numbers.* Prerequisite: Mathematics 236, 272. 3 s.h. Warner

Mathematics and Science Institute

Botany 214. *Survey of Modern Botany II.* 3 s.h. (graduate).
Botany 235, 236. *Field Botany.* 6 s.h. (graduate).
Zoology 226. *Field Zoology.* 3 s.h. (graduate).
Mathematics 21. *Introductory Calculus.* 3 s.h. (undergraduate).
Mathematics 213, 214. *Modern Algebra.* 6 s.h. (graduate).
Mathematics 215. *Intermediate Analysis.* 3 s.h. (graduate).
Chemistry 214. *Advanced Chemistry for Teachers.* 4 s.h. (graduate).
Chemistry 234. *Chemical Instrumentation.* 3 s.h. (graduate).
Physics 161. *Modern Physics.* 3 s.h.*
Physics 125. *Intermediate Physics—Mechanics.* 3 s.h.*

*Six s.h. of 100-level work may be counted toward the M.A.T. degree.

Mycology

325. *Medical Mycology.* (July 2-27.) 4 s.h. Conant

Nursing

Courses open only to students in the School of Nursing.

N50. *Chemistry.* 3 s.h. Thiers and Bernheim

N269. *Thesis Research.* 3 s.h.

N311. *Seminar in Selected Problems.* 2 s.h.

N333. *Curriculum Planning in Professional Nursing Schools.* 3 s.h. Crossland

Philosophy

Professor Charles A. Baylis, *Chairman* (201D West Duke Building, East Campus); Professor Paul Welsh, *Director of Graduate Studies* (203D West Duke Building, East Campus); Associate Professor N. L. Wilson, *Director of Undergraduate Studies* (201C West Duke Building, East Campus)

First Term

41. *Knowledge, Fact, and Value.* 3 s.h. Tice

93. *History of Philosophy: Ancient and Modern.* 3 s.h. Tice

Second Term

42. *Knowledge, Fact, and Value.* 3 s.h. Welsh

48. *Logic.* 3 s.h. Welsh

Physics

Professor Henry A. Fairbank, *Chairman* (118 Physics Building, West Campus); Professor Eugene Greuling, *Director of Graduate Studies* (211B Physics Building, West Campus); Professor Horst Meyer, *Director of Undergraduate Studies* (0028 Physics Building, West Campus)

Classes in Physics 41, Term I, will begin on June 18 and continue through July 18. Classes in Physics 42, Term II, will begin July 22 and continue through August 16. Students who wish to avoid paying a late registration fee must have their registration completed in advance of these dates. For registration dates see *General Registration* on page 31 of this *Bulletin.* (Physics classes will not meet on Saturdays.)

First Term

41. *General Physics.* Not open for credit to students who have completed Physics 1-2. Prerequisites: Mathematics 21, 22 or equivalent. 4 s.h. Carpenter and Wheeler

353X. *Thesis Seminar.* Credits and hours to be arranged. Staff

Second Term

42. *General Physics.* Prerequisite: Physics 41. 4 s.h. Carpenter and Wheeler

Political Science

Professor John H. Hallowell, *Chairman* (307 Library, West Campus); Professor J. Harris Proctor, *Director of Graduate Studies* (103 Carr, East Campus and 303 Library, West Campus); Associate Professor Samuel D. Cook, *Acting Director of Undergraduate Studies* (309 Library, West Campus)

First Term

61. *The American Political System.* 3 s.h. Simpson
125. *American Political Parties and Practical Politics.* 3 s.h. Simpson

Second Term

109. *State and Local Government Today.* 3 s.h. Leach
231. *American Political Theory.* 3 s.h. Leach

Psychology

Professor Irving E. Alexander, *Chairman* (224 Building 9, West Campus); Professor Gregory A. Kimble, *Director of Graduate Studies* (242 Building 9, West Campus); Assistant Professor Gregory Lockhead, *Director of Undergraduate Studies* (223 Building 9, West Campus)

Details concerning the program in studies in Psychology may be obtained from the Director of Graduate Studies in Psychology.

First Term

91. *Introductory Psychology.* 3 s.h. Guttman
100. *Personality.* 3 s.h. Staff
211. *The Problem Child (Also Education 211).* 3 s.h. Mecke
232. *Personality and Physical Handicap.* 3 s.h. Huse
303. *Research.* Hours and credits to be arranged. Staff

Second Term

141. *Personality and Behavior Disorder.* Prerequisite: Psychology 100. 3 s.h. Staff
304. *Research.* Hours and credits to be arranged. Staff

Religion

Professor Thomas A. Langford, *Chairman* (118 Gray Building, West Campus); Professor Waldo Beach, *Director of Graduate Studies* (209 Divinity School, West Campus); Associate Professor J. H. Phillips, *Director of Undergraduate Studies* (117 Gray Building, West Campus)

First Term

51. *The English Bible.* Not open to freshmen or to students who have received credit for Religion 1. 3 s.h. Bradley

55. *The Religion of the Bible.* Not open to freshmen or to students who have received credit for Religion 1-2 or 51-52. 3 s.h. Kort

154. *Ethics and Modern Technology.* 3 s.h. Clark

187. *Religious Values in Classical and European Literature.* 3 s.h. Kort

Second Term

52. *The English Bible.* Not open to freshmen or to students who have received credit for Religion 2. 3 s.h. Jones

85. *Introduction to Christian Ethics.* Prerequisite: Religion 55. Not open to students who have completed the uniform course requirements in religion. 3 s.h. Clark

156. *Christian Marriage and the Family.* 3 s.h. Phillips

175. *Non-Christian Religions of the Modern World.* Not open to students who have received credit for Religion 93. 3 s.h. Bradley

Romance Languages

Professor John Fein, *Chairman* (205 Building 5, West Campus); Associate Professor Thomas H. Cordle, *Director of Graduate Studies* (303 Building 5, West Campus)

French

First Term

1. *Elementary French.* 4 s.h. Thiher

63. *Intermediate French.* Prerequisite: French 1-2 or two years of high-school French. 4 s.h. Hogsett

Second Term

2. *Elementary French.* 4 s.h. Bryan

64. *Intermediate French.* 4 s.h. Tate

Spanish

First Term

1. *Elementary Spanish.* 4 s.h. Spencer
63. *Intermediate Spanish.* Prerequisite: Spanish 1-2 or two years of high-school Spanish. 4 s.h. Torre

Second Term

2. *Elementary Spanish.* 4 s.h. Cox
64. *Intermediate Spanish.* 4 s.h. Fein

Slavic Languages and Literatures

Associate Professor Magnus J. Krynski, *Chairman* (314 Language Building, West Campus)

First Term

1. *Elementary Russian.* 4 s.h. Pavlov
191. *Independent Study.* (Directed study in the Russian language.) Permission of the department required. 6 s.h. Staff

Second Term

2. *Elementary Russian.* 4 s.h. Jezierski
192. *Independent Study.* (Directed study in the Russian language.) Permission of the department required. 6 s.h. Staff

Sociology and Anthropology

Professor John C. McKinney, *Chairman* (268I Building 9, West Campus); Professor Joel Smith, *Director of Graduate Studies* (332 Building 9, West Campus); Associate Professor Donald F. Roy, *Director of Undergraduate Studies* (273 Building 9, West Campus)

The Department of Sociology offers graduate work leading to the A.M. and Ph.D. degrees. Before undertaking advanced work in this Department, a student must have completed a minimum of 12 semester hours of approved preliminary courses in the field, and 12 additional semester hours in the field or in related work. A student who is deficient in the minimum required work will be asked to take additional undergrad-

uate courses agreed upon in conference with the Director of Graduate Studies.

Candidates for advanced degrees in Sociology usually take minor work in Psychology, Economics, Political Science, Education, History, or Religion. Detailed requirements for the minor work, and for majors in other departments who wish to present Sociology as minor work, may be obtained from the Director of Graduate Studies.

First Term

91. *Introduction to Sociology: Concepts and Procedures.* Open to freshmen. 3 s.h. Garrity

153. *Sociology of the South.* 3 s.h. Thompson

253. *Social Institutions.* 3 s.h. Thompson

Second Term

92. *Introduction to Sociology: Sociological Studies.* 3 s.h. Stokes

241. *Social Stratification.* 3 s.h. Borinsky

247. *Community and Society.* 3 s.h. Borinsky

Zoology

Professor Edward C. Horn, *Chairman* (227 Biological Sciences Building, West Campus); Associate Professor R. Bruce Nicklas, *Director of Graduate Studies* (044 Biological Sciences Building, West Campus); Professor Joseph R. Bailey, *Director of Undergraduate Studies* (340 Biological Sciences Building, West Campus)

All classes in Zoology are offered at the Duke University Marine Laboratory at Beaufort, North Carolina (Term I, June 11-July 18; Term II, July 19-August 24). Students who wish to avoid paying a late registration fee must have their registration completed in advance of these dates. For registration dates see *General Registration* page 31 of this *Bulletin.* For detailed instructions and further information on these offerings see the *Bulletin* of Duke University Marine Laboratory.

To undertake study toward an advanced degree in Zoology, a student should have completed an undergraduate major in Zoology or its equivalent. This normally amounts to twenty-four or more hours of course work distributed among various fields of Zoology. The Department recognizes the trend in modern biology towards interdisciplinary research, and part of the Zoology requirements may be replaced by advanced work in Chemistry, Mathematics, Physics, etc.

Required work for the A.M. degree ordinarily includes twelve units of advanced course work in Zoology, six units of course work in a minor

department, and an additional six units of advanced course work in the major or minor department, or in other pertinent departments. Furthermore, an acceptable thesis is necessary for the fulfillment of the degree requirements.

Candidates for the Ph.D. degree are expected to be broadly trained zoologists. The program of each candidate is determined by a committee which reviews previous training and sets the specific requirements to be made. Normally the program includes graduate courses in several fields of Zoology, courses in the minor subject, wide reading in science in general and in biology in particular, research, and dissertation based on original work. Minor work is available in many fields, including Anatomy, Biochemistry, Botany, Chemistry, Physics, Physiology and Psychology.

First Term (Duke Campus)

353. *Research.* Hours to be arranged. 2-6 s.h. Staff

First Term (Duke Marine Laboratory)

203 (Beaufort). *Marine Ecology.* 6 s.h. Pierce

250 (Beaufort). *Physiological Ecology of Marine Animals.* Prerequisite: Zoology 151 or equivalent. 6 s.h. Vernberg

353. *Research.* Hours to be arranged. 2-6. s.h. Staff

Second Term (Duke Campus)

354. *Research.* Hours to be arranged. 2-6 s.h. Staff

Second Term (Duke Marine Laboratory)

215 (Beaufort). *General Physical and Chemical Oceanography.* Prerequisites: One year of Physics and Chemistry, Mathematics through Calculus. 6 s.h. Stefansson

274 (Beaufort). *Marine Invertebrate Zoology.* 6 s.h. Lytle

354. *Research.* Hours to be arranged. 2-6 s.h. Staff

Appendix

Degrees and Honors

The following degrees were awarded June 3, 1968:

Bachelor of Arts

Judith Ellen Abrams
Kenneth Elliot Adler
John Charles Alexander, Jr.
Deanna R. Allen
John Christopher Alstrin
Dana K. Andersen
Charles Alexander Anderson
Sarah Graham Anderson
Lâle Fatma Anitas
Gary Harrison Anthes
David Lee Armbrecht
Stephen Louis Aronoff
Kay Kristin Arthur
Thomas Carlton Arthur
William Henry Ashford, III
Jimmy D. Atkins
Richard Bernard Atkinson
Robert Hunt Auld
Leslie Ann Baar
Catherine Ruth Babcock
David Gardner Bacon
James H. Pou Bailey, Jr.
Sharron Kay Bailey
Michael I. Banker
Anthony Andrew Barone
Joel Barr
Gene Gordon Barron
Carol Ann Barthel
Sandra VanRensselaer Bassett
Ninian Beall, Jr.
William Howard Beasley, III
Andrew F. Beath
Wayne Arthur Beatty
Keith Whitman Bell
Kenneth Louis Bell
William Henry Bell, Jr.
Katherine Ann Belton
Jo Alice Bennett
Linda Gates Bennett
Patricia Gray Berg
Frederick Allen Berger
Eric Charles Bergman
William Gordon Berkey
Richard Kenneth Berman
Elzabeth Anne Blackmore
Steven Joseph Blattau
Katharine Ann Blessing
Rebecca Jane Bloomer
Robin Orr Bodkin
John Charles Boger
Roberta Susan Bole
Janet Marie Bolinger
Stephen Elliott Bond
Lydia Ware Botsford
Robert Fulkerson Boughner
Patrick Box
Nancy Christina Bradley
Lucy Birnie Brady
Judith Ann Braley
Donad Ray Brannon
Richard Eugene Braren
Richard John Brashler, Jr.
Kendall Harold Breedlove
Arthur Bridge
Marion Alice Brittingham
Janet Christine Broderson

John Martin Brooks
Gary Wayne Bross
David Castner Browder
Linda Joanne Brown
Genevieve Rose Burcham
John Tyson Burton
John Davis Butts, Jr.
Kenneth Michael Calestro
Tolliver Cleveland Callison, III
Eugene Bedford Cannon
Ashley Kent Carrithers
Christina Young Carson
Edward B. Carter, Jr.
Robin Charles Carter
Jack Richard Censer
Carol Chapman
James David Charlet
Peter George Chikes
Paul Stuart Chisholm, Jr.
John Lee Choate
John Thomas Christian, II
Carl Stewart Chronister
Niccolo A. Ciompi
Diane Marie Clayton
William Lacy Clifton, Jr.
Betty Boyd Cockrill
John Leslie Coker
Robert Alan Colborne
Stella Jane Cole
Susan Ann Cole
Patrick Daniel Coleman
Mike W. Collier
John Peter Colman, Jr.
Alan Craig Cone
Andrea Ruth Conklin
Anthony Joseph Connor
Bruce Hartmann Connors
James Corbin Considine
Robert Franklin Cook
Russell Yale Cooke, III
Jere Louise Cooper
Robert MacAdam Cooper
Mark Beryl Coplan
Dee Corbell
Charles Maturon Couric, Jr.
Sarah Lewis Court
Carol Ann Cowgill
Charles Joseph Cross
William Wood Cross, Jr.
Dale Jones Crowell
John David Crowell
Jasper L. Cummings, Jr.
Kenneth Earl Cunningham
Christian William Dame
Susan Anne Danahy
Albert Michael D'Annunzio
Robert Frederick Daugherty
Clifford Baynes David
Julie Ann Davis
Larry Edward Davis
Mary Anne Davis
Nick S. Davis
Pamela Clarice Davis
Roger Keith Davis
Gale Unger Day
Winfred Watt Deal
Barbara Dean
Barbara Jeanne Deering
Gretchen Elise DeJager
Christopher Kevin Delaney
Joyce Mary Denman
Thomas Baxter DePriest
John Patrick Dingle
Antoninette Lynn Dixon
Abigail Doggett
Mark Lindsey Donnell
Nancy Bagley Donnell
Mary V. Donohue
Gregory A. Donovan
Wilton Rodwell Drake, Jr.
David Holmes Drennen
Mary Jeanne Druse
David McLean DuBose
Douglas W. Duncan
Rebecca Dunitz
Louise Cecil Dunlap
Gansevoort Hurlbut Dunnington
Alan Page Dye
Christopher Linton Edgar
Robert Blair Edlow
Joseph B. Edwards
John Fred Eggleston, Jr.
Victoria Mary Eldredge
Robert Lindley Metcalfe Ellis
Laurel Davis Ellwanger
Jon Rice Elmendorf
Lucy Elizabeth Enfield
Robert Alan Erickson
Peggy Ruth Erlanger
Larry Clayton Ethridge
Margaret Stone Everhart
Wendell Elliot Eysenbach
Sara Jane Fallis
Elizabeth Bailey Farmer
Jeannette Wooding Farmer
Robert Woods Fay

Patrick Scott Feely
George Stone Fields
Theodore O. Fillette, III
Alvin Jay Fineman
Frank Burkett Fondren, IIII
Sally Harris Foote
B. Keith Forgy
Teresa Lynn Forrester
David Stephens Forth
Barbara Lee Fowble
James Robert Fox
Robert E. Fox
Craig Booth Fraser
Sarah Patterson Frazier
Constance Frederick
Leon David Freedman
Christie Chaplin French
Jacqueline Mary French
Robert Hattan Friesen
Sarah Marjorie Froeber
Mary Beth Fudge
Cheryl Lynne Fuller
Richard Bolling Fuller
Thomas R. Fuller, Jr.
Maryellen Fullerton
Penelope Fulton
Charles R. Fyfe
Steve Earl Gaddis
Irma Jean Gailey
Helen Faith Gallagher
David Ross Garr
Joseph Harold Gauthier
Alan F. Geoffrey
Thomas Edmund George
Natasha Geren
Thomas Michael Gerken
John McNeill Gibson
Thomas B. Gibson
Geoffrey Novash Giles
Mark Henry Gitenstein
Richard Casper Glass
Jane Craven Godwin
Marion Montagu Goethals
Charles Austin Goff
Dorothy Mary Gohdes
Stephen Norman Goldberg
Stephen Charles Golden
Harvey J. Goldman
Stephen Mark Goldman
Nancy Anderson Goodridge
William Olin Goodwin
Katharine Amanda Gosnell
Roy Alfred Goss
Alan Howard Gradman
Linda Bevan Graffy
Philip Wayne Graham
Cheryl Eileen Grant
Gordon Fowler Grant
Donald Joseph Grasso
Pamela Anne Graves
John Willam Gray, III
Mary Margaret Grcich
Lawrence Allan Greenberg
Beverly Carol Griffith
Thomas Shearman Griggs, Jr.
James Davis Hackett
John R. Halderman
Celia Elaine Hales
John Raymond Hall
Nancy Anne Hamm
Joseph Samuel Hammond
Eric Paul Handler
Frank Fiquet Hanna
Sarah Karla Harbin
James Douglas Hardekopf
Carol Jean Whetstone Hardin
Bertrand Morrison Harding, Jr.
Sarah Graves Harkrader
John Fitch Harper
Joe Newton Harris
Thomas Adams Harris
Anne Wood Hartsfield
Janice Lynn Harvey
Elizabeth Ann Hastings
Jancie Margaret Hatchell
James Thomas Hay
Roger Grayson Hayes
John Barry Haynes
Julie Mary Healy
Mark Osborne Heaney
James Christopher Hearn, Jr.
Alan Parker Heaton
John William Heller
Mark Lee Helpin
David Martin Henderson
Frederick L. Henderson
Margaret Anne Henderson
Robert Craig Henry
Michael Dave Hernandez
Monnie Teesue Herring
Donald Dale Herzberg
Leslie Ann Heyman
Beverly Anne Higgins
James Lindsay Highsmith, Jr.
Constance Anne Hill
Mary Lee Hill

Sara E. Pate Hinson
Joyce Ann Hobson
Richard Denver Hogue
Mary Hollenbeck
John Thomas Hollon
Janet Lee Holt
Truett M. Honeycutt
Thomas Brown Hottenstein
Robert Hartley Howe
John Julian Hoy
Louis Frederick Hubener, III
Clifton Turner Hudgins, Jr.
Carole Roberts Hudson
Tamela Jean Hultman
Nicholas Hume
Sue Katherine Humphrey
Katherine Kirk Humphreys
David Jeffrey Hunt
Patricia Ann Hurdle
Lynn Margaret Hutchison
Kathleen Elizabeth Irwin
Juliet Kibbey Isherwood
Constance Elaine Jackson
Thomas James, III
Gordon Womble Jenkins
Karen Sue Jenkins
Jerry Wyche Jernigan
David Vaughn John
Paul Edward Johnson
Robert Tracy Johnson
Erik Joki
Annabel Lambeth Jones
Catherine Jones
Farris Jay Wiggle Jones
Gregory G. Jones
Leslie Marion Jones
David Lyon Jubanowsky
James William Kalat
Sharon Anne Kalmbach
Hal Kammerer
Arnold J. Katz
Leslie Marion Kelly
Christine Woodward Kelso
Mary Ellen Kendall
Joseph Aloysius Kennedy
Rosella Mae Kern
Mary Josette Kiefer
Susan Jean Kimball
Roy Caldwell Kime
Mary Ann King
Margaret McCartt Kinney
John Mason Kirby
Terence Allen Kirchhoff
Raymond John Klauss
David Turner Knapp
Nancy Louise Knapp
David Lawrence Kneapler
Edmund M. Kneisel
Timothy Michael Kolodziej
Thomas Gregory Kopp
Howard Marshall Korschun
Robert Alfred Kraas
David Lawrence Kreger
John Henry Krimmel, Jr.
Barbara Marie Kuck
John Ludvig Kundzins
Susan Ashton Kuntz
Kenneth Eric Lacy
Jean Ellen Landberg
Nathan Lane, III
Alan Robert Lang
Benjamin Gaines Lang
Enid Diane Lang
Tania Kay Lang
Robert Newton Laughlin, Jr.
David Maurice Lavine
Glenn Robert Lawrence
William Benjamin Lawrence
Charles Andrew Lawson
Gayle Barkley Lee
Camilla Hodges Leggett
William Rado Leighton
Betsy Wilson Leith
Candace Marie Leland
Barbara Crawford Lennox
Joseph Bancroft Lesesne
Patricia Webb Levering
Anita Eagle Levine
Robert Stephen Levine
Michael James Lewis
Luray Marie Lindgren
Betsy Bell Link
Daniel Brooks Lippard
Margaret Eloise Litaker
William Curtis Looper
Cathy Hamilton Losey
Jean Louise Louderback
Trude Sellin Lowenbach
William Carl Ludwig
Carma Lee Lustig
Sandra Jean Lymberis
Johnny Joseph Mack
Constance Chase MacLeod
David Huntington Manning
Donald Earl Manning
John Calvin Manship, III

Robert J. Marshak
David Joshua Martz, Jr.
John Dwight Mason
Lawrence Ryder Matthews
Carl P. Matthies
Teresa Faye Mattox
Dennis Eugene May
Gary Lee May
Randolph Joseph May
Ann Elizabeth McAdams
R. Donald McAfee
Donna Jean McCampbell
Pender M. McCarter
Robert James McClelland
Charles Gettys McClure
Nancy Campbell McCormick
Anne Aylesbury McCoy
Gordon Paul McDonald
Margaret Rose McGrane
Geoffrey Ray McGraw
William R. McHugh, III
Clinton McKellar
Thomas Elliott McLain
Mary Louise McLaurin
Mary Jane McNeely
Reed McRoberts
Jack Dobbs McSpadden, Jr.
Sara Pettes McWilliams
Andrea Beryl Mednick
Paul Saunders Messick, Jr.
Mary Catherine Metzger
Anne Stewart Meyer
Karen Sue Meyer
Duke Miles
David Bruce Millar
John Randolph Miller
Nan Leslie Miller
Randall Clifford Miller
Richard Sterrett Miller
Luther Emerson Milspaw, Jr.
Harvey William Mininsohn
Jeffrey Guy Mitchell
Karen Louise Mitchell
Anne Brownson Mize
Marilyn Isabel Montgomery
Jane D. Moody
Margaret Elizabeth Moore
Mary Berkeley Moore
Joseph Alfred Moretz, III
Claire Lewise Murphy
John Michael Murphy
Robert Paul Murphy
Gail Alison Myers
Wilbur Leonald Myers, Jr.
Andrea Libbey Nash
Howard Gordon Nathanson
John Stephen Naulty
John Edwin Neithammer
James F. Nellis, Jr.
Hugh Thomas Nelson, IV
Meredith Ann Nelson
William Henson Nelson, Jr.
Dale Sorlie Ness
Susan Ellen Newman
Robert Owen Newton
John W. Nichols, Jr.
Russell Lee Norburn, Jr.
Betty Herlocker Nordan
Edwin Lloyd Norris
Judith Ellen O'Brien
Tom Watson O'Bryon, II
James Leon Oesterle
David Mitchell Ogrodnick
Dorothy Delany Onn
Svea Sarah Oster
Polly Catherine Ott
Roselyne Yvonne Owens
Patti Woolley Paddock
Carolyn Norton Padgett
Nancy Bowen Page
Sandra Cathleen Paine
George Lee Painter
Patricia Lee Palmer
Thomas Edwin Palmer
Linda Susanne Pannill
Jeffrey Joseph Park
Meredith Thomas Park
Pamela Ann Parker
Rodger Brigham Parker
Philip M. Parmesano
Patricia Ann Partney
Christine Elizabeth Partridge
Carl Lloyd Patrick, Jr.
Patrice Elaine Patterson
George Allen Patton, Jr.
Bettie Kent Paylor
Karen Maria Pearce
Michael Allen Pearlman
William Jefferson Pendergrast, Jr.
Thomas Granger Perry
Marsha Carolyn Petersen
William Bruce Phillips
William Lewis Phipps
John Anthony Piccirillo
Ann Pickard
Tempa Olivia Pickard

Ray Vaughn Pierce, III
Elizabeth Day Piercy
Henry Owens MacGill Pierson
Patricia Ellen Piper
D. Kennieth Pittman, Jr.
Rodney Creamer Pitts
Stephen Richard Place
Margaret Ann Plant
Susan Faye Poe
Margaret Ann Porter
James Vincent Porto, Jr.
Grafton Moore Potter, Jr.
Michael Morris Pousner
Richard Freeman Prentis, Jr.
Charles A. Primmerman
Chesley Hammond Prince
Margaret Gunning Pringle
Toby Batson Prodgers
James Claude Ray
Bonita Kathryn Reardon
John Andrew Redmond
James Stewart Reed, Jr.
Charles Frank Reich, III
Caroline Baskin Reid
Richard William Reifsnyder
Nancy Ann Rhett
Mary Mikell Kent Rice
Lillian Campbell Richards
Geraldine Richardson
Robert John Riesenfeld
David Alan Riggs
Barbara Lee Ringwald
John Coe Robbins
Rosalind Jo Robbins
Samuel Edgar Roberson
Jane Gwyn Robertson
David McKune Roberts
Jennie Neel Robinson
Jay Thomas Rock
Paul Hamilton Rogers, V
Vinton Lee Rollins
Mark Woodson Root
Patricia Sheve Rose
Robert Mark Rosenthal
Robert Hutchins Roser, Jr.
Marion Lue Ross
Robert Andrew Roth, Jr.
Nancy Rottenberg
Welda Ruth Rudin
Ronald Harold Ruis, II
Kenneth Alan Rutherford
Francis William Ryan
Grace Helen Saïd
Diane St. Clair
Stuart Marshall Salsbury
Manuel Lee Salter, Jr.
Willis Kendrick Samson
Gary Rupert Sanborn
Timothy Alonzo Sanderson
Blase Dale Sands
James Stephen Sapp
Janet Marilyn Sapp
Arnold Morris Schechter
Ralph F. Schenck, Jr.
Joseph Albert Schodde
Brain Lawrence Schoenfeld
Gretchen Wood Schroder
Karen Kay Schuerman
Peggy Marie Screws
Robert K. Seidel
Gerald Raymond Severson
Virginia Pauline Shackford
Michael Ellsworth Shahan, Jr.
Frank Donald Shapins
Barry Lee Sharoff
Julie Marie Sharratt
Rees R. Shearer
Susan Ollene Shirley
Stuart Alan Shorenstein
Frances Margaret Shurcliff
Robert Francis Sikora
Steven Edward Simon
Robert Alan Simons
William John Simons
Frank Julian Sizemore
Dale Arthur Slivinske
Margaret Hocker Small
Mary Buchanan Small
Dinah Yates Smith
Kingston Earl Smith
Sharon Alice Smith
Alex Jackson Smythers
Ann Roberts Smythers
Philip Trout Snead
Jane Dixon Snotherly
Jeffrey Bruce Snyder
William Gordon Snyder
Mark Alexander Spiegel
Betty Jean Spinelli
Hyman Stadiem
Steven Zachary Stark
Richard Allan Stein
Michael Allan Stephens
William H. Stephenson
John Robert Stevens
Samuel Keatly Stewart, Jr.

Joseph Powell Stokes
Paul Mason Stokes
Stanley Stoler
Constance Lynn Stubbs
Gary Winterson Stubbs
Virginia Ellen Sullivan
Florence Hamrick Sumner
Charles Vann Sweet
John Wilber Swetnam
Michael Thomas Swomley
Robert B. Swyers
Thomas Fleming Taft
William Douglas Tanner, Jr.
William Elarion Tarasuk
John David Taurman
Michele Tavernise
Martha Allan Taylor
Wilbur Wells Thomas, III
A. Blair Thompson, III
John Gill Thompson, Jr.
William Henry Thorne
William B. Timmerman, Jr.
Norwood Boyd Tisdale
Carl William Tobias
Frances Virginia Travis
James Winston Tredway, III
Nancy Jeanette Tribley
Richard Carrington Trotman
Allan Bradley Truax
Donald Nelson Tschan, Jr.
Ann Rosamond Turner
Carmen Irma Turner
Frances Lynch Tuttle
Leonard Charles Tylka
Dorn Wilcox Ulrich
Neil Albert Upmeyer
Charlene Rose Vala
Susan Elizabeth Vandale
Richard Abbott Van Dusen
Arthur Vann, III
Arthur Alexis Varela, Jr.
Jesse William Veatch, III
Vicki Viccellio
Dale Leon Vincent, Jr.
Ruth Elizabeth Wade
Robert James Waldman
James Robert Waldo
Emily Elizabeth Walker
Roscoe Walker, III
Susan Elise Walker
Doris Claudeene Wall
Henry Walter, III
Carolee Ann Walton
Douglas Alan Ward
Sarah Elizabeth Warden
Christine Lorelle Ware
Paul William Warlick, Jr.
Gerret Preston Warner
James Root Warner, Jr.
Richard Paul Warren
Mark Wasserman
William Connelly Waterfield
Thomas Richard Watson
Suzanne Weikert
Worth Hamilton Weller
David Kenton Wellman
Carl Franklin Wells
J. Harry Wells
Ronald Lee Wendelin
Helen McKinley West
Susan Hanabury Wheeler
Frank Alan White
John Frederick Whitehead, III
Robert Simeon Whitelaw, Jr.
John Richard Wickersham
Jack Clement Wilkerson, Jr.
James Albert Willard
Virginia Hope Willets
Charles Bruce Williams, Jr.
Keith Colby Williams
Wendy Marjorie Williams
Helen Elizabeth Willis
John Kelver Willis, II
David Brooks Wilson
Elizabeth Anne Wilson
Larry L. Wingate
Paul Regan Winters
Jane McFall Wiseman
Mary Julia Wolf
John Frederick Wolfe
William C. Wonnacott
Judy Carline Woodruff
Erwin Franklin Workman, Jr.
John Walter Worthington
Archie Taylor Wright, III
Glenn Patton Wright
David B. Wuehrmann
James Stevenson Wunsch
John Colligan Wylie
Henry Newton Young, IV
Margaret Stephanie Zeller

Bachelor of Science

Margaret Jane Adkinson
Kerbey Taylor Altmann
Robert Mason Banta
Philip William Barnhart, Jr.
Linda McKissack Beale
Linda Christine Berghorn
Ellen Sue Bers
Judith Ann Boreman
Martha Carol Brimm
Clinton Marion Brown, Jr.
Wyatt Livingstone Brown, Jr.
James Stevan Calver
David Louis Cohen
Irvin M. Cohen
Myra Lou Collins
Donald Crary, Jr.
Thomas Houston Cromartie
Charles Davant, III
John Jefferson Davis
Jane Drew Dewalt
Barbara Bruce Dotson
Anita Edryce Dresser
Rand Edwin Dybdahl
James Riley Eitel
Jeffrey Lance Elliott
Susan Jean Engel
Gary Richard Feichtinger
Michael Robin Flick
Katharine Knox Flory
Carl Walter Foeller, Jr.
Donald Hoagland Frazier
Judith Louse Freeman
Robert Leslie Fritz
Donald Ira Gale, Jr.
George Kenneth Ganaway
William M. Garrett, Jr.
Donald Eliot Goodkin
Gail Griffith
Henry Hibbard Hartley, Jr.
Mary Corinna Head
David William Heaton
Richard Hellmann, II
Ann Merrill Henderson
Terry Wayne Hull
Robert Winfield Iden
Michael Benton Johnson
Terry Johnson
Stephen Bruce Kahl
John Adkins Kasch
Craig Lawrence Kien
Frederick P. Knape
Robert Emerson Lasky
George Mathews Lawson, Jr.
Lewis Terry Lazarus
Robert Gerald Lees
Prescott Manning Little, Jr.
Ronni Elaine MacPherson
James Barry Maynard
Kenneth Scott McCarty, Jr.
Michael Carlton McMillen
Randall George Michel
Benjamin Neely Miller, III
Grady Wilson Miller, III
Robert Alan Miller
Alma G. Moon
Kathleen Marguerite Musser
Haring Jetse Walles Nauta
William Edward Nelson
Charles P. Neumann, Jr.
Sara Frances Nolting
Gwynne Lula Ormsby
Boris Matija Peterlin
Maryanne Elizabeth Petrosino
Wayne Arnold Preisman
Peterman Ridge Prosser
Dolores Annette Randolph
Lucy Anne Roberts
Michael Anderson Roberts, Jr.
Jerome Harold Saks
Chrisman George Scherf, Jr.
Don Albert Schweiger
Richard Lynn Scott
Gail Dalton Singletary
Darland Conrad Smith
Jaquelin Lucy Fisk Smith
John Howard Smith
Douglas Edward Stackhouse
Ann Leslie Stanford
Ronald Jay Stanley
Frances Linda Stewart
William Kelly Stuart
Edward Joseph Sullivan
Karen J. Swanson
William Roy Taylor, Jr.
John Seaman Townsend
Robert Stephen Tremlett

John Joseph Tria, Jr.
William Oscar Wallace
Gail Geier Wilkerson
James Chamberlain Wilson
Jeffrey Wellington Wilson
Jack Work
Kenneth Wharton Young, Jr.
Mary Margaret Younger

Bachelor of Science in Civil Engineering

Kenneth Staulding Chestnut
Charles Wesley Churchman
Robert Creighton Clift
William C. Colden, III
Robert Scott Cross
Martin E. Falk
Thomas Earl Flynn
Thomas Edward Gunn
John McWane Hayes
David Michael Holloway
William E. Ismael
Samuel Peyre Lapham
James Eugene Lunson, Jr.
Kenneth Thomas Page
William Joseph Patton
Lee Davis Petty, Jr.
Philip Noble Post
Edward Michael Reefe
Dan Greer Robertson
Russell Lawrence Schoudt
Robert Turner Shipp
Robert Taylor Summers
Richard Miles Thompson
H. Craig Welborn
Richard Nathan Wilkerson

Bachelor of Science in Electrical Engineering

Douglas Waterman Boehm
Norman Atwater Cocke, III
Robert Beveridge Cotton, Jr.
Kenneth Huntington Griffiths, Jr.
Virginia Ellen Hahlbohm
Charles Anthony Hall
David Keith Henney
Edwin Jethro Johnson
Harold Hooker Lane, Jr.
Richard Stockton Lord, Jr.
John Howard Luecker
Dennis Howard Matthias
Clifton Lee McGlothlin
Roy Dunwody Moon
Charles N. Moore, Jr.
Robert Lewis Padgette
Robert Charles Phares
Richard Edward Pribyl
Timothy White Ryder
Peter Miles Stetler
Donald Hamilton Turnbull
William Henry Glasson Wheeler
David Paul Wollaeger

Bachelor of Science in Mechanical Engineering

Donald Walter Brown, Jr.
Lewis Byrns Campbell
Donald Bruce Coleman
Thomas Leonard Haas
Alfred J. Hooks
Lee Mountcastle Kenna, Jr.
Charles H. Leach, Jr.
Robert Bruce Macduff
William Vernon McCrary, Jr.
Eric Robert Myers
Michael Blaine Roads
Thomas Wilson Shuford, III
Charles David White
D. Bruce Wiesley, Jr.
Alan William Withers
James Albert Young

Bachelor of Science in Nursing

Mary Elizabeth Agnew
Susan Catherine Louise Anderson
Edith Lynn Brown
Sara Anne Bye
Jacquelyn Bowman Campbell
Kathryn Elizabeth Chapman
Betsy Grier Cook
Brenda Hardin Craig

Judie Kay Dalson
Aundrea Jean Deaton
Alexandra Jane Deemer
Barbara Jean Denny
Deborah Jean Ether
Susan Carol Farmer
Carol Drunette Gerhold
Catherine Jo Helm
Marsha Lynn Hendershot
Martha Lillian Henderson
Annette Hudson
Karen Ann Kandra
Clare Vickers King
Elizabeth Wren Klise
Patricia Kay Kohms
Mary Margaret Kutsche
Alae Risse Leitch
Heidi Ann Link
Denise Carnahan Macklin
Anne Wilson Mandetta
Catherine Leah Mizell
Mary Beth Monk
Linda Lee Murphy
Ann Elizabeth Newlin
Jarleth Van Meter Nurkin
Donna Bevacqua Ominsky
Paula Bridget Plamondon
Lindi Kay Smith Pollok
Robin Louise Prall
Carolyn Ann Randecker
Barbara Patterson Reed
Joanne Roth
Susan Scott
Marcia Jeanne Sherrard
Sandra Louise Singleton
Lauren Kathleen Smilari
Sharon Lea Stanley
Joann Wardle
Marilyn Waugh
Margaret Lee Wilcox
Carol Anne Wood

Master of Science in Nursing

Suzanne Friedley
Barbara Brod Germino
Celia Elizabeth Lamper

Master of Forestry

Joel David Artman
Carlos Emilio Barrera
Luís Soares Barreto
David Royce Cox
James Raymond Davidson
Louis Welsh Eckstein, Jr.
Thomas Macoy Francis
John Modris Grods
Herman Haeruman Js
Gerard Dennis Hertel
Edgar Earl King, Jr.
Earl Charles Mirus, Jr.
Alexander George Mullin
Thomas Edward Waddell
Bradley Hale Warren

Master of Religious Education

Mary Eunice Benfield
Jimette McLean
Judy Ann Spencer
Jerri Woods White

Master of Arts in Teaching

Lide Cooke Anderson
Eva Lee Blaine
Ronald Gerard Culver
Carol Jean Drowota
Linda Keyworth Hall
Mary Agnes Holzgrefe
Charles Edward Hoye
Carol Anne Bagley Hutton
Irene Glaser Margulies
Margaret Anne Menning
Barbara Ann Pfohl
Martha Franck Rollins
Barbara Kay Tuggle
Evelyn Conway Yeoman

Master of Education

John McLauchlin Adams, Jr.
Martha Jo Allen
Ellen A. Arnold
Roberta L. Beiser
Barbara Rohrhurst Boineau
Louise Marie Disend
Florence Mary Gauvreau
Emmma Susan Hadley
Anne Carroll Hely
Leslie Jane Horton
Margaret Louise Huelsenbeck
Margaret Mashburn Napier
William M. Peed
Sarah-Warner Jenkins Pell
Elizabeth Ann Riener
Max Richard Rumelhart
Joan Carol Sweemer
Connie Lou Warf
Sharon Elizabeth Wells
Martha Emmie Winders
Sara Heyward Wolfe

Master of Hospital Administration

Mary Mauline Blanks
Richard Harper Cobb
William Jefferson Comer
Wayne Francis Fesler
Kester St. Clair Freeman, Jr.
George Stephen Hopkins
Ralph William Kletzien
Dennis Edward Klima
David William Lopp
Edward Ingalls Lummus, Jr.
Harry Abraham Nurkin
James Raymond Stith
Lynn Stanton Tuttle
William R. Zuercher

Master of Science

Ernest Granville Baxa, Jr.
James Hoffert Brindle
Benjamin Thorp Brodie
Charles Proctor Hatsell
Chao Hsiung Hu
Walter C. Metz, Jr.

Master of Arts

Timothy Eagan Anna
Erika Matthey Arndt
William Paul Bendiner
Monica Boyd
Sara Evans Boyte
Michael Brandstadter
Robert Wellman Chamberlin
Philander Dean Chase
Roderick Allan Church
Mary Ronan Clarke
Douglas Bruce Cook
Frances Ilene Councill
William Ralph Crites
Norville David Crowder
Peter John Dennis
Christine Ermina Dorresteyn
Margot Iris Duley
William Michael Fraley
Edward Stanly Godbold, Jr.
Sara Evelyn Guthrie
Stanley Theodore Gutman
Jay Edward Hakes
Richard John Hargrove, Jr.
Catherine Tuttle Harris
Betty Carol Hayes
John Leonard Helgerson
Paul Brentwood Henry
Francisco José Hernandez
Hiroshi Hoketsu
Paula Elizabeth Hollerbach
Archie Vernon Huff, Jr.
Dennis William Johnson
Ralph Edward Johnson
David Robert Jones
Janet Suzanne Hankins Keefe
Günter F. Klabes
Clayton David Lein
Joanna McNeil Looney
Sandra Ann Lucas
Brenda Lee Mackey
John Michael Matthews
Ronald J. McAllister

Martha Trimble McCoy
Rebecca Amorelle Michaels
Patrick Armand Morelli
Robert William Moseley
Paul David Nelson
Thomas Elbert Noel, III
Anthony Oyewole
Richard Elsom Paddock
C. R. Paramesh
Roger Thomas Parrott
Louis Watson Potts
Daniel Edwin Read, Jr.
Chatham Hurst Reed, Jr.
Ralph Byron Robertson
Jerald F. Robinson
Elizabeth Ann Sikes
William Arthur Simmons
Donald Cameron Stuart, III
Larry E. Suter
Peter Michael Terlecky, Jr.
Carol Mary Tobin
Tran My-Van
Sally Jo Vasicko
George Lee Watson
Daniel Arthur Wells
Donald Glenn White
Gerald Lee Wilson

Master of Divinity

Quay Wyatt Adams
Charles Edward Alexander
Cecil Samuel Arnold, III
Herbert James Barker
Emily Jarrett Beals
James Edward Bullard
Judith Ann Burrier
Lynn Robert Buzzard
Alex A. Chambers
Reece Edward Cook, Jr.
Charles Newton Crutchfield
Ben Willard Curry
Henry Lee Curry, III
Carlton Earl Davis
Thomas Jefferson Duncan, Jr.
Jack Dale Durbin
Jay Howard Fast
Horace Taylor Ferguson
John Koonts Ferree
James Herbert Freeman
William Joseph Fowler
Franklin Wilson Grice
Toby Albert Hale
Harry Conclave Hannah, III
Roy VanIngen Harris
Thomas James Herin
Hubert Howard Hodgin
Charles Reed Inabinet
Franklin Wade Ingram
C. Randal James
John Paul Jaquette, Jr.
Robert Franklin Johnson
Jerry Jay Juren
Ann Marie Kaiser
William Andrew Kerr
Daniel Ofei Kwapong
Stanley Edward LaTorre
Dale Irving Leifeste
Thomas Clarence Little
Stephen R. Moore
Louis Herman Murray
William Winter Newman
James Earle Norton
David Russel Peters
Donald Erwin Rankin
James Michael Rink
Donald Lee Roberts
James Edward Roe
Theresa Scherf
Donald H. Seely
Clarence O'Dell Stokes
D. Clark Thompson
George Edward Thompson
Henry Churchill Thompson
Larry Edward Tise
David Lee Wade
Billy Julian Weisner
Rock Elliott Welch
Charles Denny White, Jr.
Joseph Louis Williams
Denny C. Wise

Bachelor of Laws

James Lee Rohwedder
James Huston Toms

Juris Doctor

Charles Michael Abbott
Bruce Donald Alexander
Michael Paul Angelini
Frederick William Assini
Carl Francis Bianchi
Brain Henry Bibeau
Paul Thomas Boroughs
Jacob Alonzo Bouknight, Jr.
George Winslow Brannen
Christopher Quincy Britton
Donald Bradley Brooks
Garrett Edward Brown, Jr.
John Ramsey Brownell
Laurie B. Bruce
Charles Bryan Burton
David Wilson Carstetter
Truman R. Castle
Joel Stewart Charleston
Thomas James Clarke
Gary Lee Davenport
Stephen G. Dickerman
H. Thomas Dunck, Jr.
William Everette Eason, Jr.
Henry Lee Ferguson, III
Paul B. Ford, Jr.
Stuart Michael Foss
Robert Craig Fox
Robert Kevin Garro
Gilbert Lawrence Gates
Ernest Lamond Goff
Ralph Bertram Greener
Geoffrey Hamilton
William Geremain Hancock, Jr.
James Michael Hardin
Andrew Marr Harkness
David Alden Harlow
James Lee Hatcher, Jr.
Edward Whittlesey Hieronymus
Virginia Margaret Hopkinson
Randall Lamar Hughes
Stuart Nye Hutchinson, III
Charles Owen Ingraham
Fulton Parker Jeffers
Carl Edward Johnson, Jr.
Richard E. Jonas
Richard Vaughan Jones
Basil Walter Karmazyn
Peter Francis Kearns
James H. Kelly, Jr.
James Jerome Kendig
Lawrence Maury Kimbrough
John Danison Kirby
Roger Harvey Kissam
Rosemary Kittrell
Walter Odell Lambeth, Jr.
Stephen William Leermakers
Carl Francis Lyon, Jr.
Edward Malinzak
Robert Stillwell Marquis
Kent Earl Mast
Robert W. Maxwell, II
James Patrick McGowan
Thomas J. McKee
Marilyn Elaine Meadors
Donald H. Messinger
Martin John Miller
Walter G. Moeling, IV
Fred Henry Moore
Thomas Hugh Murphy
Stephen Herrick Palmer
William Lee Patton
Stephen Phillip Pepe
William McKinney Piatt, IV
Stuart Fries Pierson
William Peter Pinna
David Edward Prewitt
Gordon Smeade Rather, Jr.
Edward Arthur Reilly
Overman Randolph Rollins
Thomas Lee Romp
Charles Peete Rose, Jr.
James Robert Safley
Charles Franklin Sampsel
Philip Dale Saxer
Henry Edward Seibert, IV
William Boyd Settlemyer
Ronald Vance Shearin
Jerrold Shenkman
Robert Lyndon Simpson, Jr.
James Louis Smith, III
William Ross Stewart
Joe Todd Taylor, III
Ernest Carl Torres
Eugene Clifton Traver
Marlin M. Volz, Jr.
Brice Toland Voran
Lynn Edward Wagner
John Robert Walker, III
John C. Weistart
Frederick Richard Wirtz
William Flavel Wright

Doctor of Medicine

Michael James Arons
John Pepper Atkinson
Stephen Bruce Baylin
Peter W. Bickers
Michael Allen Block
Martin James Brickman
Bruce Ronald Carlton
Gerald Chotiner
Joseph William Cook, Jr.
Ann Ward Crosson
Charles M. Culver
Richard Earnest Damiano
Maurice Julian Duttera, Jr.
Sam Bingham Edwards, Jr.
Carl Spencer Eisenberg
Frederick Robert Ellwanger, III
William Glenn Elmore
Frederick John Elsas
Robert Joseph Emslie
Stephen Saul Entman
Hugh Terrance Fahy
William Homer Fee, Jr.
Lois Talbot Flaherty
Henry Armfield Foscue, Jr.
Douglas Garland Freeman, Jr.
Elsie Lachencayr Freeman
Jonathan Freeman
Robert Lewis Goldenberg
David Marshall Goodner
Richard Lee Green
Robert Paul Haberkern
James Hardman Hall
Frank Late Harrison, Jr.
John Martin Hicks Hart
Thomas Franklin Henley
David Patterson Henry, II
Doris Gayle Holberg
Jay Everett Hopkins
Forney Hutchinson, III
Thomas Morgan Hyers
Gitta Wiessner Jackson
Laurance Folkey Johnson
Dennis Eblen Darnell Jones
Howard Wilbur Jones, III
David Harvey Katz
Frank Kern
Rebecca Trent Kirkland
Ted Richard Kunstling
Arnold Martin Kwart
Dennis Roy Lebbin
Bertram Joseph Levy
William Sumner Logan
Donald Frank Mandetta
Richard Lawrence Miller
Terence Neal Moore
Robert Edmund Morton
Robert Alan Older
William Isaiah Park, III
Michael Dean Parker
Charles Vance Peery, II
James Wendell Plonk
Roger John Porter
Terence Nat Reisman
Edward John Sarver
James LeRoy Scherer
David Seligson
Ronald Perry Seningen
Geoffrey Kray Sherwood
David Nathan Silvers
Joe Leigh Simpson
Joel J. Snider
Mark G. Sollek
Jacek Jan Stasikowski
Robert Christopher Stucky
Charles Van Taft
Andrew Thompson Taylor, Jr.
Thomas Gardiner Thurston, III
John Dement Utley
Harlan Ira Wald
William Felix Wheeler, Jr.
James Walter Wilson
Stephen A. Wohlgemuth
Marigail Wynne

Master of Theology

Lawrence Clay Adams
Julian McClees Aldridge, Jr.
Robert William Bedingfield
Roy Vance Bolyard, Jr.
Orman Richard Bowyer
John Harley Cecil
Robert Ellis Dowda
Fred Keith Macon
Robert Louis Moore
Gregory Albert Otte
John Arthur Piirto
Acie David Stewart

Doctor of Education

Thomas Hilton Batchelor
James Thomas Davis
Dale Everette Gaddy
Erwin Maxwell Hunt
William Elliott Inabinett
Emory Huston Mason, Jr.
Mary Ann Musser
Barbara M. Parramore
Harold Wayne Quinton
Grace Snead Ross
Guy Timothy Swain
Harry Eugene Varney
Thomas Edward Vernon
Marian Lee Vick
Thomas Noble Walters
Marshall Macon Wilson

Doctor of Forestry

James Preston Barnett
George Harley Belt, Jr.
Glyndon Elbert Hatchell
Thomas Denny O'Neal
Frank Ronco, Jr.
Harold Emil Wahlgren
Garland Ray Wells

Doctor of Juridical Science

Marvin M. Moore

Doctor of Philosophy

Parker Bishap Albee, Jr.
Chester Alexander, Jr.
Robert Livingston Avinger, Jr.
Michael George Barbour
Orus Cleveland Barker, Jr.
Roger Coke Barr
Harry Richard Beaudry
Robert Louis Bissell
Monte Rae Blair
Robert Grady Blake
Linda Anne Brookover Bourque
William James Breen
James Hugh Broussard
Richard Conrad Bruce
Jay Gordon Bryson
Francis Joseph Burger
Roger Bivens Burt
Alan Warren Bushell
Richard Dudley Carmichael
Ronald Wilfred Crowley
Gary Paxton Crowther
Leonardo de Vera Cruz
Daniel W. Deis
Carl Dale Donathan
Sue McGhee Duttera
Eleanor Hall Ellis
Mary Elizabeth York Enstam
Timothy Robert Gamelin
Wallace Edward Garthright, Jr.
William Osborne Goode
Judith Grassle
James Edmond Green
Larry Carroll Haun
Marilyn Constance Head
John Frederick Heider
Henry Dunham Herring
Stephen John Hersey
Margaret Ann Hilt
Edward Merrick Hogan
Abunasar Shamsul Hoque
Larry G. Howell
Geoorge Stewart Jackel
John Frederick Jarvis
Yolande Jeanne Emma Jenny
Eldon Lewis Jones
Peter David Jones
Philip Dwight Jones
David Teh-yu Kao
George Albert Keyworth, II
James Johnston Kirkwood
Franklin Glenn Liming, Jr.
Arnold Buist Lopez-Cepero
Johannes Anton Alexander Lovink
Charles Townsend Ludington, Jr.
Sanford E. Marovitz
William R. Marty
David William Mascitelli
Robert Keiser Massey, Jr.

Lawrence Richard McCloskey
Waldo Bruce Mead
Gene Miller
William Andrew Moffett
Richard Leslie Morrill
Thomas Bruce Mowbray
Thomas DeWitt Myers
James Francis Naylor, III
Jerry Michael Neff
Thomas Wheller Nuckols
James Herbert O'Mara
David William Osgood
Norman Lee Owsley
David Frank Palmer
Edwin Forrest Pearson
John Milton Peterson
Jene Miles Porter
Roger Dale Ray
James Noble Rees
Charles Phillip Patrick Reid
Dorothy Irene Riddle
George Waller Robinson
Theodore Frederick Rochow
Charles Stanley Rooks
David Phillips Ross
John Emery Sallstrom
Philip Allen David Schneider
David Ben Seligman
Frank Amfort Shelburne
Mayrant Simons, Jr.
Richard Howard Stamelman
James Lawton Stokesbury
John Arthur Stone
Karl David Straub
Vernon Oral Stumpf
David Emery Sweet
Lon E. Ussery
John Loren Washburn, II
Charles Phillip Weatherspoon
Virgil Harris Webb
Henry Richard Weller
Clark Woody White
Robert Arnold Wicklund
Jay Reigle Williams
John Alfred Witherspoon
Donald Bruce Zobel

Commissions in the United States Navy and Marine Corps

Ensign, United States Navy

Bruce Hartmann Connors
Jon Rice Elmendorf
Robert Edward Fox
Thomas Edward Gunn
Joe Newton Harris
John McWane Hayes
Donald Dale Herzberg
Joseph Bancroft Lesesne
Clifton Lee McGlothlin
Grady Wilson Miller, III
William Joseph Patton
James Albert Young

Ensign, United States Naval Reserve

George Stone Fields
David Turner Knapp
Edmund Moore Kneisel
Robert Charles Phares

Second Lieutenant, United States Marine Corps

Gary Wayne Bross
John Edwin Neithammer

Second Lieutenant, United States Marine Corps Reserve

Robin Charles Carter
Christian William Dame
James Vincent Porto, Jr.

Commissions in the United States Air Force

Second Lieutenant, United States Air Force Reserve

Robert Mason Banta
Steven Joseph Blattau
William Lacy Clifton, Jr.
Winfred Watt Deal

Edwin Jethro Johnson
Philip Noble Post
David Alan Riggs
Robert Hutchins Roser, Jr.
Richard Carrington Trotman
Harold Craig Welborn
Carl Franklin Wells
Robert Simeon Whitelaw, Jr.

Degrees Awarded September 1, 1967

Bachelor of Arts

Douglas Glenn Adams
Rebecca Ragan Akins
J. Alan Amery
Henry B. Banzhaf
Worth Howard Boone, Jr.
Harry Chatten Boyte
Alexander Henry Carver, III
Kenneth Dale Chatham
William Alan Cliff
Samuel Thomas Coleman, Jr.
Ann Margaret Dodds
Frampton Erroll Ellis, III
James Arthur Estey
Ronald Gomer Evans
Dale Steven Frediani
William Patrick Griffith
Jon Leland Heberling
Peter William Hemmenway
Ann Cole Kernodle
John Robert Kernodle, Jr.
Thomas Wade Lathram
Douglas Scott Lyons
Holcombe Tucker Marshall, III
Lennox Caroline Mauldin
Mary Eugenia Monroe
Andrew Moursund, Jr.
John Clement Ruggero
Margaret Ann Sheppard
David Prince Street
Ronald Edward Vigil
Carolyn Marguerite Weaver
Dana Lehr Webster

Bachelor of Science

Patricia JoAnne Caputo
Sandra J. Deegan
James Edward Hieserman
Ward Frederick Rundles
Elizabeth Shippen Tate Scott

Bachelor of Science in Mechanical Engineering

Howard Philip McJunkin, Jr.
Herbert W. Mumford, III
Gary R. Stengl
Larry Walter Thomas

Master of Forestry

James Allen Cummings
Thomas Lester Hart
Musa Falah Qudah
Toshiro Tochigi

Master of Arts in Teaching

Josephine Candace Armstrong
Johnny Michael Avery
Donald Carl Baldwin
William Nott Beard
Reuben Raymond Belongia
Jere Noel Blackburn
Anne Miller Brown
Penelope Hunt Cairns
Hubert D. Callihan
Everrett Lowell Chrisman
Mary Allen Covington
Dorothy Bauer Derge
Randolph Charles Dickens
Nancy Gayle Dillard
Louise Helen Dowling
Ramona Edwards Farthing

Betty Nantz Gordon
Joanna Headstream
Eugenia M. Henderson
Robert Louis Hiett
Linda Whitney Hobson
Gary Robert Hunter
James Emmett Jordan, Jr.
James Charles Kane
Henry Jacob Katz
Rebeccah Ann Kinnamon
Elizabeth Jones Lashley
August Robert Lawrence
Charles Ervin Lewis
David Lloyd Marcus
Jacqueline Rodriguez Mattice
Edward Daniel McKenna
Jerry Osborne McWilliams
Richard L. Miller
Beverly Milner
Jean Ellen Morris
Maureen Anne Nicholson
Holly W. Perrow
Lois Ann Pollard
Ann Elizabeth Ratcliffe
Alice Chumbley Ray
Richard Kenneth Reider
Fred W. Renker, Jr.
Caroline Kendall Roetzel
Sharon Jadee Sandling
John Patrick Schellenberg
Lester Elwood Schickling
Duncan Sinclair
James Gray Smith
Leroy Paschal Smith
Earl Kenneth Solenberger
Howard Earl Spanogle
Caroline Killian Spratt
Nell Petteway Talcott
Catherine Gibson Taylor
Katherine Truscott
Alexander Kelly Tyree
William Hardy Weatherspoon
Fred Arthur Wright, Jr.
Mary Gabrielle Thomas Wright
David H. Wrotniak

Master of Education

Patricia Cole Barton
Michael James Bradshaw
Donald Clarke Beckwith
Daniel Lewis Bowers
Mary Ann Britt
Annie Ruth Bullock
Betty Phillips Cooper
Catherine Treadway Creech
Diane G. Gwinn
Jane Eileen Horsley
Whitney Paul Mullen
Helen Jean Hosty Murphy
James Norman Perry
Joan Louise Schonour
Harriet Shenkman
Ruth Janet Tarlton

Master of Science

R. Vijay Kumar
Thou-Han Liu
Tyzz-Dwo Lu
Lindwood Arnold McCullers
William Sloan Plumer, Jr.
Pedro J. Querejeta
William August Sander, III
Kenneth Harold Swanson

Master of Arts

Jack Murray Armistead
Leland David Barringer
Sara Scott Beard
Betsy Lee Beineke
Eva Carolyn Boyd
Richard Dean Brandau
Marie Lynn Hunken Caldwell
Zer-Yuang Chang
James William Clark, Jr.
Thomas Bethel Colvin
Elizabeth Burleson Douglass
Larry James Doyle
Ernest Lathan Estes, III
William Henry Gilbert
Elizabeth Weaver Green
Rodney Arthur Grunes
Dixie Elise Hickman
Ann Boardman Kircher

Barbara Irene Kreps
Bruce Earle Langdon
Kenneth Theodore Lind
Bruce William Menning
Ann Morrow
Gail Yukie Okawa
Thomas Gerald Pelham
Rudolf Plehwe
Mary Eggert Potts
Ursula Virginia Riddick
Edward Delafield Ruch, Jr.
Byron Lee Schmid
Malinda Gar Snow
Andrée Lévesque Stein
Randall Goodson Stokes
Larry Robert Strong
Conrad Evan Sugar
David Charles Tassinari
Charles A. Thomas, III
Richard Pou Van Balen
Majorie Dale Wade
Geng Mei Wang
Sarah Lanier Warnecke
Thomas Marvin Williamsen
Anna Florence On Lin Woo

Bachelor of Laws

Frank Allen Campbell, Jr.

Doctor of Medicine

Donald Jarvis Williams

Doctor of Education

Donald Elmer Howard
John Francis Lavach
William Calvin Sanderson

Doctor of Philosophy

Christopher Mead Armitage
LeRoy Joseph Bennish, S.J.
Henry Burt Biller
Martyn Mathews Caldwell
George Allan Cate
William Forrest Chambers
James Hamilton Charlesworth
Mikael Ciftan
Gernot Siegmar Doetsch
John Morgan Gates
Richard Foster Glenn
Patrick Joseph Gormely
William Charles Hall
William Edward Hammond, II
Charles Stanley Harris
Jeremy John Hatch
Koleen Haire Huggins
Peter Edward Jackson
Randall Rich Kincaid, Jr.
Montague Brown Lewis
Jerry Bryan Lincecum
Betty Robinson Macleod
Dorothy Mansfield-Jones
Greayer Mansfield-Jones, Jr.
Ausonio Marras
George Lake Morgan
Margaret Sue Hill Neece
Ronald Roy Nelson
David Leigh Pancoast
John Preston Pooler
Donald Edgar Pursell
William Henry Queen
William Sherard Rawson
William Charles Redmond
Robert Bolling Roe, Jr.
Charles Allen Rogers
Charles Lowe Rogers
John B. Ross
Robert Harold Roth, Jr.
David Edwin Schneider
John H. Schwarz, Jr.
John Paul Shontz
Harry Charles Sieber
Marvin Snyder
Keith Dwain Stephenson
Shiang-tai Tuan
Albert Blythe Turner
Lyon Gardiner Tyler, Jr.
Michael Waszak
Stephen Rankin Wilson

Honors and Distinctions of Candidates for Degrees

June 3, 1968

The Woman's College and Trinity College

Summa cum laude

John Seaman Townsend
Ann Leslie Stanford
Dorothy Mary Gohdes
Katherine Kirk Humphreys
Patricia Gray Berg
James William Kalat
Gwynne Lula Ormsby
Gary Richard Feichtinger
Polley Catherine Ott
William Roy Taylor, Jr.
Sandra Cathleen Paine
David Lawrence Kneapler
John Jefferson Davis
Jasper L. Cummings, Jr.

Magna cum laude

Carol Ann Barthel
Martha Carol Brimm
Robert Emerson Lasky
Bettie Kent Paylor
Robert James Waldman
John Fred Eggleston, Jr.
Betty Boyd Cockrill
Patricia Ann Hurdle
John David Taurman
Linda McKissack Beale
Sarah Elizabeth Warder
Richard William Reifsnyder
Barbara Lee Fowble
Lucy Anne Roberts
Betsy Bell Link
William Gordon Snyder
Joseph Bancroft Lesesne
Rebecca Dunitz
Ronald Jay Stanley
Joel Barr
Anne Aylesbury McCoy
Catherine Ruth Babcock
Nancy Bowen Page
Barbara Jeanne Deering
Sarah Graham Anderson
Robert MacAdam Cooper
Robert Gerald Lees
Janet Marilyn Sapp
Mark Osborne Heaney
Philip M. Parmesano
Myra Lou Collins
Paul Mason Stokes
Charles Gettys McClure

Honors in Departments and Schools

Departmental Graduation with Distinction

Art

Leslie Marion Jones

Botany

Judith Louise Freeman

Business Administration

Betty Boyd Cockrill

Chemistry

Thomas Houston Cromartie
Katharine Knox Flory
Robert Gerald Lees
Boris Matija Peterlin
Jerome Harold Saks

Economics

William Howard Beasley, III
Nancy Anne Hamm
Clifton Turner Hudgins, Jr.
Susan Jean Kimball
Alan Robert Lang
Jack Dobbs McSpadden, Jr.
Mary Catherine Metzger
Richard Sterrett Miller
Philip Martin Parmesano
Mark Alexander Spiegel

Civil Engineering

Russell Lawrence Schoudt

Electrical Engineering

Douglas Waterman Boehm
Dennis Howard Matthias
Roy Dunwody Moon
Richard Edward Pribyl

Mechanical Engineering

Donald Walter Brown, Jr.
Lee Mountcastle Kenna, Jr.
Charles David White
Alan William Withers

English

Carol Ann Barthel
Tolliver Cleveland Callison, III
Thomas Baxter DePriest
Katherine Kirk Humphreys
Anne Aylesbury McCoy
Margaret Ann Plant
Margaret Gunning Pringle
Jay Thomas Rock
Sarah Elizabeth Warder
James Root Warner, Jr.
Jane McFall Wiseman

History

Paul Mason Stokes

Mathematics

Grady Wilson Miller, III
William Roy Taylor, Jr.

Music

Karen Sue Jenkins

Philosophy

Robert Blair Edlow

Political Science

Thomas Elliott McLain
Meredith Ann Nelson
Margaret Hocker Small

Physics

John Jefferson Davis
Lucy Anne Roberts

Psychology

Irma Jean Gailey
James William Kalat
Betsy Bell Link
Svea Sarah Oster
Nancy Jeanette Tribley
Allan Bradley Truax

Religion

William Benjamin Lawrence
James Stephen Sapp

Sociology

Judith Ann Nicholson
(for 1966-67)

Zoology

Myra Lou Collins

School of Engineering

Magna cum laude

Edward Michael Reefe

Elections to Tau Beta Pi

Douglas Warteman Boehm
Donald Walter Brown, Jr.
Robert Scott Cross
David Michael Holloway
Lee Mountcastle Kenna, Jr.
Robert Bruce Macduff
Dennis Howard Matthias
Roy Dunwody Moon
Philip Noble Post
Richard Edward Pribyl
Edward Michael Reefe
Russell Lawrence Schoudt
Charles David White

School of Nursing

Magna cum laude

Deborah Jean Ether

Jacquelyn Bowman Campbell

The Divinity School

Summa cum laude

Robert Ellis Dowda
Thomas James Herin
William Andrew Kerr
Larry Edward Tise
Charles Denny White, Jr.

Magna cum laude

Robert William Bedingfield
James Edward Bullard
Lynn Robert Buzzard
Harry Conclave Hannah, III

School of Law

Elections to the Order of the Coif

William Everette Eason, Jr.
Randall Lamar Hughes
John Danison Kirby
Rosemary Kittrell
Carl Francis Lyon, Jr.
Kent Earl Mast
William Lee Patton
Overman Randolph Rollins
James Louis Smith, III
John C. Weistart
Edward Whittlesey Hieronymus
Randall Lamar Huges
Richard E. Jonas
John Danison Kirby
Rosemary Kittrell
Carl Francis Lyon, Jr.
Kent Earl Mast
Robert W. Maxwell, II
Walter G. Moeling, IV
William Lee Patton
Stephen Phillip Pepe
Overman Randolph Rollins
James Louis Smith, III
Marlin M. Volz, Jr.
John C. Weistart
Frederick Richard Wirtz

Graduated with Distinction

H. Thomas Dunck, Jr.
William Everette Eason, Jr.
James Michael Hardin

School of Medicine

Elections to Alpha Omega Alpha

Stephen Bruce Baylin
Maurice Julian Duttera, Jr.
William Glenn Elmore
Frederick John Elsas
Robert Joseph Emslie
Elsie Lachenmayr Freeman
David Harvey Katz
Bertram Joseph Levy
William Sumner Logan
Donald Frank Mandetta
William Isaiah Park, III
Michael Dean Parker
David Seligson
Geoffrey Kray Sherwood
Marigail Wynne

Special Prizes and Awards

American Public Works Association Prize—Edward Michael Reefe

American Society of Civil Engineers Prize—Russell Lawrence Schoudt

American Society of Mechanical Engineers Award—Charles H. Leach, Jr.

Alice M. Baldwin Scholarship Award—Carol Ann Barthel
Luray Marie Lindgren
Sharon Alice Smith
Ann Roberts Smythers

Evelyn Barnes Memorial Scholarship Award—Candace Marie Leland

Borden Undergraduate Research Award in Medicine—Jonathan Freeman

Davison Scholarship—James LeRoy Scherer

Delta Delta Delta Scholarship Award—Patricia Ann Partney

Dermaquizz Award—Richard Lawrence Miller

Duke University Department of Chemistry Award—Thomas Houston Cromartie

Duke University School of Medicine Award—Thomas Franklin Henley

Duke University School of Nursing Alumnae Award—Martha Lillian Henderson

Friends of Duke University Library Book Collector's Award—Walter Guerry Green, III
First Prize

Janet M. Glasgow Memorial Scholarship Award of the American Medical Woman's Association—Elsie Lachenmayr Freeman

Hamilton Watch Award—Russell Lawrence Schoudt

Lange Medical Publications Award—Elsie Lachenmayr Freeman
William Sumner Logan

William T. Laprade History Prize—Paul Mason Stokes

Robert E. Lee Award—Robert Emerson Lasky

Merck Index Award—Dorothy Mary Gohdes
David Lawrence Kneapler
Ann Leslie Stanford

Milmow Prize—William Henry Wheeler

C. V. Mosby Book Award—Martin James Brickman
Frederick John Elsas
Elsie Lachenmayr Freeman
Thomas Morgan Hyers
Howard Wilbur Jones, III
William Isaiah Park, III
James LeRoy Scherer
Geoffrey Kray Sherwood
Harlan Ira Wald

Moseley Award—Annette Hudson

The National Foundation Essay Award—Joe Leigh Simpson

North Carolina Association of Certified Public Accountants Medal—
Betty Boyd Cockrill

Panhellenic-Sandals Scholarship Award—Elizabeth Anne Wilson

Roche Award—Elsie Lachenmayr Freeman

Charles Ernest Seager Memorial Award—Roy Dunwody Moon

Walter J. Seeley Scholastic Excellence Award—Edward Michael Reefe

George Sherrerd III Memorial Award in Electrical Engineering—
Dennis Howard Matthias

Smith Kline and French Award for Medical Writing—Joe Leigh Simpson

Smith Kline and French Foreign Fellowship—David Seligson (1968)
James Hardman Hall (1967)

The Trent Prize in the History of Medicine—Frederick John Elsas (1965-1966)
James Walter Wilson (1966-1967)

Upjohn Award in Community Medicine—Marigail Wynne

Elections to Phi Beta Kappa During 1967-1968

Sarah Graham Anderson
Kay Kristin Arthur
Thomas Carlton Arthur
Richard Bernard Atkinson

Catherine Ruth Babcock
Joel Barr
Carol Ann Barthel
Linda McKissack Beale
Patricia Gray Berg
Eric Charles Bergman
John Charles Boger
Roberta Susan Bole
Arthur Bridge
Martha Carol Brimm
Donald White Brown, Jr.
Tolliver Cleveland Callison, III
Jack Richard Censer
Carol Chapman
Betty Boyd Cockrill
Myra Lou Collins
Robert MacAdam Cooper
Thomas Houston Cromartie
Jasper Lee Cummings, Jr.
Susan Anne Danahy
John Jefferson Davis
Barbara Jeanne Deering
Rebecca Dunitz
John Fred Eggleston, Jr.
James Riley Eitel
John Oliver Evans, Jr.
Gary Richard Feichtinger
Barbara Lee Fowble
Judith Louise Freeman
Jacqueline Mary French
Maryellen Agnes Fullerton
Dorothy Mary Gohdes
Stephen Mark Goldman
Lawrence Allan Greenberg
Mark Osborne Heaney
Mark Lee Helpin
Katherine Kirk Humphreys
Patricia Ann Hurdle
Leslie Marion Jones
James William Kalat
John Adkins Kasch
David Lawrence Kneapler
Robert Emerson Lasky
William Benjamin Lawrence
Robert Gerald Lees
Joseph Bancroft Lesesne
Betsy Bell Link
Sandra Jean Lymberis
Constance Chase MacLeod
Charles Gettys McClure
Anne Aylesbury McCoy
Grady Wilson Miller, III
Bruce Douglas Noe
Edwin Lloyd Norris
Gwynne Lula Ormsby
Svea Sarah Oster
Polley Catherine Ott
Nancy Bowen Page
Sandra Cathleen Paine
Philip Martin Parmesano
Boris Matija Peterlin
Margaret Gunning Pringle
Edward Michael Reefe
Richard William Reifsnyder
Lucy Anne Roberts
Jay Thomas Rock
Jerome Harold Saks
James Stephen Sapp
Janet Marilyn Sapp
Russell Lawrence Schoudt
Darland Conrad Smith
Sharon Alice Smith
William Gordon Snyder
Mark Alexander Spiegel
Ann Leslie Stanford
Ronald Jay Stanley
Paul Mason Stokes
Edward Joseph Sullivan
John David Taurman
William Roy Taylor, Jr.
John Seaman Townsend
Nancy Jeanette Tribley
Robert James Waldman
Sarah Elizabeth Warden
Charles David White
John Kelver Willis, II
James Stevenson Wunch
Kenneth Wharton Young, Jr.
Mary Margaret Younger

Elections from Ph.D. Candidates, 1967-68

James Hugh Broussard
George Allan Cate
James Hamilton Charlesworth
Ronald Wilfred Crowley
Lyon Gardiner Tyler, Jr.
Charles Phillip Weatherspoon
Donald Bruce Zobel

*Undergraduate Class Honors, 1967-68**

Trinity College

Freshman Honors

Douglas S. Brierley
Richard Eugene Manners
Roger Richard Solomon
Roger William Lidman
Michael F. Gilligan
William Tobin Miller
Mark David Lees
William H. Blackwell
Scott Carey Sanborn
Robert Denton Meadows
Thomas Roy Witt
John Lyndon Newell
Benjamin Wesley Franklin
Rickie E. Carlisle
Sydney Dalzell Thompson
Douglas Willard Brenton
Steven Armitage Evans
Kenneth H. Faller
Richard Marion Draffin
William David Gaither
John Ogden Manter
Nick Steven Kaluk, Jr.
Henry Niles Nelson, III
John Stanley Storlarek
David Andrew Boone
Byron Roscoe Trauger
Victor Henry MacIntosh
Jeffrey Roberts Lee
Eugene H. Buckle
Dykeman Cole Stokely
Charles Kantor
Robert Mathew Entman
Eddie Meek Williams, III
Laurence Jay Robbins
John Francis Terrell
Benjamin Barnes Powell
George Roberts Gilbert

Sophomore Honors

Jeffrey Hugh Forster
John D. Schrumpf
Stephen E. Young
Charles D. Stephens
Gordon G. Carmichael
Richard W. Moore, Jr.
Robert D. Stulting, Jr.
John B. Cannon
Robert Cunningham, Jr.
Clark R. Wilcox
Michael Landis
John L. Abernethy
Leonard A. Zwelling
John B. Henderson
Robert M. Geist, III
Harry Finklea
John J. Brown
Thomas H. Dunigan, Jr.
John M. Cheesman
Julian S. Suhrer
Wayne A. Blanks
John M. Rowles
Howell G. Henry
James R. Cochran
Randall R. Long
Robert M. Townsend
Kentwood D. Wells
Jeremy A. McCreary
Peter G. Stimpson
Mitchell L. Cohen
David M. Rubenstein
Robert F. Todd
Russell K. Nieli
Paul M. Herbst
David L. Walters
Howard M. Boyd
David G. Olson
Kenneth P. Vickery
Robert Algot Otto Froman
William A. Bald
John H. Gale
Bradford W. Smith
David M. Novick
Steven K. Hoffman

**Students listed according to average.*

Junior Honors

Kenneth Cullen Harvey
Lewis Bryant Dozier
Charles Thomas Clotfelder
John H. Dixon
Jeffrey David Rochen
Eric William Lothman
Samuel Letcher Barton
Douglas George Sprugel
Harvey S. Gotts
Richard Scott
Cornelius Bullard Thomas, Jr.
Roger Harold Ostdahl
Donald Wayne Pearce
Charles Wimberley Dunn
Dallas Kern Holoman
Robert Boggs Creamer
Dorian Copenhaver
Glenn Craig Jacobsen
George Nelson Corey
Robert Paul Dolian
John David Englar
Ross E. Jones
Henry Baker Perry, III
Ronald Herbert Bennett
Douglas Van Nostrand
Steven Eric Lindberg
John D. Wilson
Ernest Cullimore Swiger
Howard John Cahill

The Woman's College

Freshman Honors

Marcia Jensen
Sheryl Scott
Mary L. Getz
Maureen R. Hanson
Mary M. Manley
Rosemary Jann
Linda J. Wulf
Elizabeth S. Wolf
Deborah L. Horton
Patricia L. June
Kathryn Christie
Diane G. Halle
Louise Pearson Smith
Leslie M. Howard
Helen A. Sadd
Linda A. Burcher
Diane J. Kyker
Candace J. Mayo

Sophomore Honors

Kathryn Christine Woodward
Linda Lee McCall
Judith Eleanor King
Karen L. Griffin
Susan Margaret Pace
Sue Ann Monger
Sandra Gail McMurray
Susan Rice
Nancy Louise Prothro
Janet M. Tremlett
Jane Lorene Rohlf
Dorothy C. Young
Anne T. McCartt
Courtney L. Caldwell
Betsey M. Rice
Barbara Ann Waterman
Julia D. Field
Beverly L. Mullen
Helen Ann Fruitstone
Elizabeth H. Feder
Linda G. Maddox
Karen Jean Wehrle
Jacqueline Paris
Jean M. Gesecus
Elizabeth A. Staple
Margaret J. Satterfield
Susan Y. Illston
Janis A. Wende
Judith A. Patton
Laura L. Patton
Mary Blasingham

Junior Honors

Julie Bergren Holmquist
Polley Catherine Ott
Lois Carolyn Nielsen
Ellen Gaige Titus
Margaret Anne Van Antwerp
Katherine Alyce Crane
Mary Jane Kellett
Wendy Salinger
Tracy Margaret Whittaker
Merle Schreiber
Mary Kendra Lewis
Loula Fern Haywood
Carol Anderson Crosby
Mary Ardeen Donker
Camille Badzgon Wortman
Kathleen May Ashley
Pamela Vaughan
Sandra Monsman
Hannah Pierce
Lucille Knox Mason
Janice Kathryn Cary
Genevieve Christy
Sally E. Miller
Marnite Calder
Linda Turner
Cynthia Louise Peterson
Alice Adelaide Weldon
Elizabeth Cornwell
Barbara Ann Bressman
Edith Bachelor
Vera Hopkins Cudlin
Sue Stromberg
Carol Ann Tewksbury
Gloria Jean Guth
Jean E. Martin
Regina Stroh Lang
Janet Paula Steel
Judy Elizabeth Wilt
Mary Etta Eyler
Deborah Baker
Dorothy Rupp
Lois Adell Tuten

The School of Engineering

Freshman Honors

Thomas Kelcec
Curt Arnold Rawley
Clarence Earl Thomas
John Steadman Marold
Michael David Jones

Sophomore Honors

Kenneth H. Pugh
Stephen S. Lexow
Douglas S. Mitchell
Eric S. Sjoberg
Walter G. Bashaw

Junior Honors

Richard Evans Gordon
John Preston Harper, Jr.
James Roy Jackson
Sharon Lorraine Bonney
John Howard Judd, Jr.
James Emmett Lenz, Jr.
Frank Owen Irvine, Jr.
Anthony Dean Morgan
Eric Vassar Witt
Daniel Roberto Altschuler
James Donald Kemp
Thomas Horton Beckett
Richard Alan Nay
Thomas L. Farquhar
Joseph Howard Jarboe

Enrollment Statistics—October 15, 1967

	Full Time		*Part Time*		*Non-Resident*		*Auditors*	*Other*	*Full-time Equivalent*	*Total*
	Degree	Non-Degree	Degree	Non-Degree	Official Leave	In Absentia				
UNDERGRADUATE:	4502	16	8	29	21	—	33	—	4535	4609
Woman's College	1374	5	7	20	15	—	16	—	1392	1437
School of Nursing	269	—	1	—	—	—	—	—	269	270
Trinity College	2428	9	—	8	6	—	17	—	2441	2468
Sch. of Engineering	431	2	—	1	—	—	—	—	433	434
GRADUATE AND PROFESSIONAL	2111	—	182	—	—	227	7	—	2177	2527
Graduate School	1130	—	163	—	—	218	—	—	1190	1511
Divinity School	263	—	6	—	—	—	7	—	266	276
Sch. of Forestry	39	—	10	—	—	9	—	—	41	58
School of Law	339	—	—	—	—	—	—	—	339	339
Medical School	332	—	—	—	—	—	—	—	332	332
Nursing School	8	—	3	—	—	—	—	—	9	11
TOTAL	6613	16	190	29	21	227	40	—	6712	7136
Post-Doctoral Medicine								394	—	394
Paramedical Studies								249	—	249
GRAND TOTAL	6613	16	190	29	21	227	40	643	6712	7779

Enrollment Statistics—March 15, 1968

	Full Time		*Part Time*		*Non-Resident*		*Auditors*	*Other*	*Full-time Equivalent*	*Total*
	Degree	Non-Degree	Degree	Non-Degree	Official Leave	In Absentia				
UNDERGRADUATE:	4356	14	16	21	26	—	31	—	4389	4464
Woman's College	1320	5	9	14	17	—	9	—	1338	1374
School of Nursing	258	—	—	1	3	—	—	—	258	262
Trinity College	2374	8	7	5	4	—	22	—	2388	2420
Sch. of Engineering	404	1	—	1	2	—	—	—	405	408
GRADUATE AND PROFESSIONAL	2070	3	117	28	—	221	8	—	2128	2447
Graduate School	1114	3	113	15	—	212	1	—	1169	1458
Divinity School	249	—	—	8	—	—	7	—	250	264
Sch. of Forestry	43	—	1	—	—	9	—	—	43	53
School of Law	328	—	—	5	—	—	—	—	329	333
Medical School	329	—	—	—	—	—	—	—	329	329
Nursing School	7	—	3	—	—	—	—	—	8	10
TOTAL	6426	17	133	49	26	221	39	—	6517	6911
Post-Doctoral Medicine								394	—	394
Paramedical Studies								228	—	228
GRAND TOTAL	6426	17	133	49	26	221	39	622	6517	7533

Index

Accounting Courses, U63
Accounting, Specialized Program in, U10
Administration, Officers of
  Business Administration, *dir*58
  Educational Administration, *dir*55
  General Administration, *dir*4
  Institutional Advancement, *dir*59
  Other Officers, *dir*62
  Student Affairs, *dir*61
Admission
  Divinity School, D34
  Engineering, School of, E33
  Forestry School, F31
  Graduate School, G39
  Law School, L17
  Medical School, M34
  Nursing School, N16, N41
  Summer Session, S22
  Undergraduate Colleges, U32
Advanced Placement, U26
Advanced Placement Course Credit, U51
Advanced Standing, Admission to, E34, U33
Aerospace Studies, U57
Aesthetics Courses, U59
Alumni
  Associations, xx
  National Council, xx
  Organizations, xx
  Publications, xx
American Christianity Courses, D57
American Literature Courses, U76
American Schools of Oriental Research, D25
Anatomy Courses, G61, M39
Anesthesia, Nurse, M78
Anthropology Courses, G112, U123
Appointments Office, E29
Army Nurse Corps, N25
Art and Illustration, Medical, M18
Art and Music Officers, *dir*63
Art Courses, G63, U59
Assistantships, G51
Athletics
  Participation in, U50
Attendance Regulations, U49
Audit, U48
Awards
  Conferred, June, 1968, A22
  Information on, U39

Bachelor of Arts
  Awarded, June, 1968, A1
  Awarded, September, 1967, A17
  Requirements for Degree of, U6
Bachelor of Laws
  Awarded, June, 1968, A12
  Awarded, September, 1967, A19
Bachelor of Science
  Awarded, June, 1968, A8
  Awarded, September, 1967, A17
  Requirements for Degree of, U8
Bachelor of Science in Engineering
  Awarded, June, 1968, A9
  Awarded, September, 1967, A17
  Requirements for Degree of, E6, U16
Bachelor of Science in Nursing
  Awarded, June, 1968, A9
  Requirements for Degree of, N5

A—Appendix, D—Divinity, E—Engineering, F—Forestry, G—Graduate School, L—Law, M—Medical School, N—Nursing, S—Summer Session, U—Undergraduate Colleges, *dir*—Directory

Bar examinations, L27
Bequests and Gifts, xxii
Biblical Studies Courses, D55
Biochemistry Courses, G63, M41
Biology Courses, U61
Biology, Interdisciplinary Programs, U11
Botany Courses, G65, U61
Business Administration Courses, U69
Business, Specialized Program in, U10
Bylaws of the University, xi

Calendar of the Colleges, iv
Cancer Training Program, M43
Charter of the University, ix
Chemistry Courses, G66, U65
Christian Education Courses, D60
Church History Courses, D56
Civil Engineering
  Courses, E66, G77
  Curriculum
    Graduate, E11
    Undergraduate, E11
  Facilities, E9
Class Standing, U52
Commissions
  AFROTC and NROTC, U23
  Awarded, June, 1968, A16
Community Health Sciences, M44
Comparative Literature Courses, G71, U70
Corporation, University
  Executive Committee, *dir*3
  University Committee, *dir*3
  University Trustees, *dir*1
Costs, *see* Fees and Expenses
Courses of Instruction
  Accounting, U71
  Aerospace Studies, U57
  Aesthetics, U59
  American Christianity, D57
  American Literature, U76
  Anatomy, G61, M39
  Anthropology, G112, U123
  Art, G63, U59
  Biblical Studies, D55
  Biochemistry, G63, M41
  Biology, U61
  Botany, G65, U61
  Business Administration, U63
  Chemistry, G66, U65
  Chinese, U61
  Christian Education, D60
  Christian Theology, D58
  Church History, D56
  Civil Engineering, E66, G77, U19
  Classical Studies, G68, U67
  Comparative Literature, G71, U70
  Design, U60
  Drama, U76
  Economics, G71, U71
  Education, G73, U73
  Electrical Engnineering, E68, G79
  Elementary Education, G73, U73
  Engineering, E65, U16, G77
  English, G82, U76
  English Literature, U76
  Forestry, F41, G84, U80
  French, G109, U117
  Geology, G87, U80
  Germanic Languages, G88, U82
  Greek, G69, U67
  Health U83
  Health Education, U83
  Hindi-Urdu, U61
  Historical Theology, D57, G108
  History, G89, U87
  History of Religion, D56
  Hospital Administration, G92, M75
  Immunology, G95, M51
  International Law, L4
  Italian, G110, U118
  Latin, G69, U68
  Law, L4
  Linguistics, U93
  Mathematics, G93, U94
  Mechanical Engineering, E70, G81, U21
  Medical Science, U97
  Microbiology, G95, M51
  Music, U97
  Mycology, G65, U62
  Naval Science, U102
  New Testament, D55
  Nurse Anesthesia, M78
  Nursing, N36, N46
  Obstetrics & Gynecology, M54
  Ophthalmology, M55
  Old Testament, D55
  Pastoral Care, D59
  Pathology, G96, M57
  Pharmacology, G100, M61
  Philosophy, G93, U103
  Physical Education, U83
  Physical Therapy, G117, M77
  Physics, G99, U105
  Physiology, G100, M61

Political Science, G101, U107
Portuguese, U118
Preaching, D61
Psychiatry, M63
Psychology, G104, U111
Radiology, M68
Religion, G106, U113
Romance Languages, G109, U116
Russian, G111, U120
Secondary Education, G73, U74
Sociology, G112, U121
Spanish, G110, U118
Speech, U76
Theology, D58, G108
World Christianity, D57
Worship and Church Music, D61
Zoology, G114, U124

Degrees Conferred, June, 1968
Bachelor of Arts, A1
Bachelor of Laws, A12
Bachelor of Science, A8
Bachelor of Science in Engineering, A9
Bachelor of Science in Nursing, A9
Doctor of Education, A15
Doctor of Forestry, A15
Doctor of Juridical Science, A15
Doctor of Medicine, A14
Doctor of Philosophy, A15
Master of Arts, A11
Master of Arts in Teaching, A10
Master of Divinity, A12
Master of Education, A11
Master of Forestry, A10
Master of Hospital Administration, A11
Master of Religious Education, A10
Master of Science, A11
Master of Science in Nursing, A10
Master of Theology, A14
Juris Doctor, A13

Degrees Conferred, September, 1967
Bachelor of Arts, A17
Bachelor of Laws, A19
Bachelor of Science, A17
Bachelor of Science in Engineering, A17
Doctor of Education, A19
Doctor of Medicine, A19
Doctor of Philosophy, A19
Master of Arts, A18
Master of Arts in Teaching, A17
Master of Education, A18
Master of Forestry, A17
Master of Science, A18

Degrees, Requirements for
Bachelor of Arts, U6
Bachelor of Science, U8
Bachelor of Science in Engineering, E6
Bachelor of Science in Nursing, N5
Doctor of Education, G16
Doctor of Forestry, F8
Doctor of Juridical Science, L8
Doctor of Medicine, M5
Doctor of Philosophy, G12
Master of Arts, G6
Master of Arts in Teaching, G10
Master of Comparative Law, L7
Master of Divinity, D6
Master of Education, G9
Master of Forestry, F3
Master of Hospital Administration, G11
Master of Laws, L6
Master of Religious Education, D19
Master of Science, G7
Master of Science in Nursing, N38
Master of Theology, D20
Juris Doctor, L3

Dental School, Preparation for, U14
Development, see Institutional Advancement
Dining Facilities, U38
Distinction, Graduation with, U55
Divinity School
Admission, D34
Courses, D54
Courses of Study, D4
Fees & Expenses, D40
Fellowships, D46
Field Education, D52
Graduate Study, D5
Library, D23, *dir*70
Living Accommodations, D42
Mastor of Divinity, D6
Master of Religious Education, D19
Master of Theology, D20
Programs of Continuing Education, D22
Student Government Association, D31

Doctor of Education
Awarded, June, 1968, A15
Awarded, September, 1967, A19
Requirements for Degree of, G16

Doctor of Forestry
Awarded, June, 1968, A15
Requirements for Degree of, F8

Doctor of Juridical Science
Awarded, June, 1968, A15
Requirements for Degree of, L8
Doctor of Medicine
Awarded, June, 1968, A14
Awarded, September, 1967, A19
Requirements for Degree of, M5
Doctor of Philosophy
Awarded, June, 1968, A15
Awarded, September, 1967, A19
Requirements for Degree of, G12
Drama Courses, U76
Duke University Press, Officers, *dir*62

Economics Courses, G71, U71
Education Courses, G73, U73
Educational Administration, *dir*55
Electrical Engineering
Courses, E68, G79
Curriculum
Graduate, E15
Undergraduate, E14
Facilities, E12
Elementary Education Courses, G73, U73
Emeriti, *dir*4
Employment Opportunities, U43
Engineering School
Courses, E65
Degrees, Requirements for, E6, E54
Graduate Program, E20
History, E3
Library, *dir*72
Physical Plant, E5
Undergraduate Program, E6
English Literature Courses, U76
English Courses, G82, U76
Enrollment Statistics, A28
Examinations,
Doctoral, G14, G15
Master's, G7
Executive Committee, University, *dir*3

Fees and Expenses
Divinity School, D40
Engineering, School of, E37
Forestry School, F33
Graduate School, G43
Law School, L21
Medical School, M26
Nursing School, N20, N43
Summer Session, S26
Undergraduate Colleges, U35
Food Services, Officers, *dir*61
Forest, Duke, F24
Forestry School
Admission, F31
Cooperative Plan of Study with Selected Colleges and Universities, F18
Courses, F41, G84
Doctor of Forestry Degree, F8
Duke Forest, F24
Fees and Expenses, F33
Fellowships, F35
Forestry in the Graduate School, F6
Library, *dir*72
Living Accommodations, F27
Master of Forestry Degree, F3
Professional Combination Courses, U15
Scholarships, F35
French Courses, G109, U117
Freshman Class, Admission to, U32

Geology Courses, G87, U80
Germanic Languages Courses, G88, U82
Gifts and Bequests, xxii
Government of the University
Bylaws, xi
Charter, ix
Indenture of Trust, vii
Officers, *dir*4
Retirement, xix
Sabbatical Leave, xix
Grade Regulations
Divinity School, D17
Engineering, School of, E47, E60
Forestry School, F40
Graduate School, G56
Law School, L26
Medical School, M7
Nursing School, N31
Summer Session, S36
Undergraduate Colleges, U50
Graduate Record Examination, G40
Graduate School, Preparation for, U13
Graduate School of Arts and Sciences
Admission, G39
Assistantships, G51
Candidacy for Advanced Degrees, G12
Commonwealth-Studies Center, G21
Courses, G61
Doctor of Education Degree, G16
Doctor of Philosophy Degree, G12
Engineering, G77
Fees and Expenses, G43

Fellowships, G48
Foreign Students, G41, G60
Laboratories, G27
Libraries, G25
Living Accommodations, G34
Master of Arts Degree, G6
Master of Arts in Teaching Degree, G10
Master of Education Degree, G9
Master of Hospital Administration, G11
Master of Science, G7
Master's Degree, Regulations Governing, G4
Registration, G53
Research Facilities, G37
Scholarships, G51
Special and Cooperative Programs, G18
Summer Session, S4
Graduation Requirements, E49, N32, U48
Greek Courses, G69, U65
Guidance, S20, G36

Health Courses, U83
Health Education Courses, U83
High School Teaching, U73
Hindi-Urdu Courses, U61
Historical Theology Courses, D57, G108
History of Religion Courses, D56
History of the University, v
Honors
Class, U54, A25
Conferred, June, 1968, A20
Graduation, A20
Information on, U54
Hospital Administration, School of, M75
House Counselors, *dir*65

Immunology Courses, G95, M51
Indenture of Trust, vii
Independent Study, U55
Institutional Advancement, *dir*59
Instruction, Officers of
Instructional Staff, *dir*8
Part Time Instructors, *dir*47
International Law Courses, L4

Juris Doctor
Awarded June, 1968, A13
Requirements for Degree of, L3

Language Requirements
Bachelor of Arts, U6
Bachelor of Science, U8
Doctor of Forestry, F9
Doctor of Philosophy, G12
Master of Arts, G6
Master of Divinity, D17
Latin Courses, G69, U68
Law School
Admission, L17
Bar Examinations, L27
Business Courses, L4
Candidacy for Advanced Degrees, L6
Courses, L3
Doctor of Juridical Science, Degree of, L8, L20
Fees and Expenses, L21
Juris Doctor, L3
Legal Internship Program, L13
Library, L9
Living Accommodations, L11
Loans, L23
Master of Comparative Law, L7, L20
Master of Laws, L6, L19
Placement Service, L12
Professional Combination Courses, U16
Property Courses, L4
Public Law Courses, L4
Publications, L15
Registration, L25
Rule of Law Research Center, L10
Scholarships, L23
Scholastic Standards, L26
Law School, Preparation for, U14
Libraries, Staffs
Art History, *dir*70
Divinity School, *dir*70
Engineering, School of, *dir*72
Forestry School, *dir*72
Law School, *dir*71
Medical School, *dir*71
Nursing School, *dir*71
University, *dir*67
Woman's College, *dir*70
Linguistics Courses, U93
Living Accommodations
Divinity School, D42
Engineering School, E27
Forestry School, F27
Graduate School, G34
Law School, L11
Nursing School, N10, N44
Medical School, M20

Summer Session, S17
Undergraduate Colleges, U38
Loan Funds, D48, E42, F37, G52, L23, M33, N26, S29, U41

Master of Arts
Awarded, June, 1968, A11
Awarded, September, 1967, A18
Requirements for Degree of, G6
Master of Arts in Teaching
Awarded, June, 1968, A10
Awarded, September, 1967, A17
Requirements for Degree of, G10
Master of Comparative Law
Requirements for Degree of, L7
Master of Divinity
Awarded, June, 1968, A12
Requirements for Degree of, D6
Master of Education
Awarded, June, 1968, A11
Awarded, September, 1967, A18
Requirements for Degree of, G9
Master of Forestry
Awarded, June, 1968, A10
Awarded, September, 1967, A17
Requirements for Degree of, F3
Master of Laws
Requirements for Degree of, L6
Master of Religious Education
Awarded, June, 1968, A10
Requirements for Degree of, D19
Master of Science
Awarded, June, 1968, A11
Awarded, September, 1967, A18
Requirements for Degree of, G7
Master of Science in Nursing
Awarded, June, 1968, A10
Requirements for Degree of, N39
Master of Theology
Awarded, June, 1968, A14
Requirements for Degree of, D20
Mathematics Courses, G93, U94
Mechanical Engineering
Courses, E70, G81
Curriculum
Graduate, E17
Undergraduate, E17
Facilities, E15
Medical Art and Illustration, M18
Medical Care, D42, E28, F29, G36, L12 M21, N11, S19
Medical School
Admission, M34
Alumni, Duke Medical, M24
Anatomy, G61, M39
Biochemistry, G63, M41
Cancer Training Program, M43
Community Health Sciences, M44
Curriculum, New Medical, M4
Dietetics, M75
Doctor of Medicine, M5
Endocrinology, M45
Fees and Expenses, M26
Hospital Administration, M74
Immunology, M51
Library, M16, *dir*71
Living Accommodations, M20
Medical Art and Illustration, M18
Medical Research Training Program, M8, M46
Medical Technology, M76
Medicine, M47
Microbiology, G95, M51
Nuclear Medicine, M77
Nurse Anesthesia, M78
Obstetrics and Gynecology, M54
Ophthalmology, M55
Pathology, G96, M57
Pediatrics, M59
Physical Therapy, G117, M78
Physiology & Pharmacology, M61
Prosthetic and Orthopaedic Appliances, M80
Psychiatry, M63
Radiologic Technology, M79
Radiology, M68
Student Government, M22
Surgery, M69
Veterinary Medicine, M81
Medical School, Preparation for, U14
Microbiology Courses, G95, M52
Music and Arts Officers, *dir*63
Music Courses, U97
Mycology Courses, G65, U62

National Council of Duke University, xx
Naval Reserve Corps, U23
Naval Science Courses, U102
Navy Nurse Corps, N25
New Testament Courses, D55
Nuclear Medicine, M77
Nursing School
Admission, N16
Army Nurse Corps, N25
Bachelor of Science in Nursing, N4
Courses, N37, N46

Fees and Expenses, N20, N43
Graduate Study, N38
Living Accommodations, N10, N44
Loans, N26
Master of Science in Nursing, N39
Medical Care, N11
Navy Nurse Corps, N25
Registration, N28
Regulations, N29
Special Students, N18
Scholarships, N24

Obstetrics & Gynecology, M54
Officers, Emeriti, *dir*4
Officers of Administration, *see* Administration
Officers of Instruction
Instructional Staff, *dir*8
Part Time Instructors, *dir*47
Old Testament Courses, D55
Ophthalmology, M55

Pastoral Care Courses, D59
Pathology Courses, G96, M57
Pediatrics Courses, M59
Pharmacology Courses, G100, M61
Phi Beta Kappa, A23
Philosophy Courses, G97, U103
Physical Education
Courses, U83
Requirements, U83
Physical Therapy, G117, M78
Physics Courses, G99, U105
Physiology Courses, G100, M61
Political Science Courses, G101, U107
Preaching Courses, D61
Prizes, U43
Awarded, June, 1968, A22
Professional Combination Courses, U15
Psychiatry Courses, M63
Psychology Courses, G104, U111
Publication of Dissertation, G15
Publications
Alumni, xx
Student, D32, E30, L15

Quality Points, U52
Quantity Credit, U51

Radiologic Technology, M80
Radiology Courses, M68
Registration
Engineering School, E45, E52
Forestry School, F38
Graduate School, G53
Law School, L25
Nursing School, N28
Summer Session, S31
Undergraduate Colleges, U47
Regulations, Academic, E46, E54, G54, U47
Religion Courses, G106, U113
Research and Publications, G37
Reserve Officers Training Corps
Air Force, U25
Naval, U23
Nurse, N27
Residence Requirements
Engineering School, E49, E54
Graduate School, S54
Nursing School, N31
Undergraduate Colleges, U52
Retirement, xix
Romance Languages Courses, G109 U116
Rule of Law Research Center, L10
Russian Courses, G111, U120

Sabbatical Leave, xix
Scholarships
Divinity School, D46
Engineering School, E41
Forestry School, F35
Graduate School, G51
Law School, L23
Medical School, M30
Nursing School, N24
Summer Session, S29
Undergraduate Colleges, U39
Science Education Major, U13
Secondary Education Courses, G73, U74
Sociology Courses, G112, U121
Special Students, U37
Spanish Courses, G110, U118
Speech Courses, U76
Student Aid, D41, E41, F35, G47, L23, M30, N24, S29, U38
Student Employment, D41, E43, L13 U43
Student Government Associations
Divinity School, D31
Engineering School, E29
Law School, L13
Medical School, M22
Nursing School, N13

Student Life, D27, E27, F27, G34, L11, M20, N10, S17
Study Abroad, Programs for, U27
Summer Session
  Admission, S22
  Courses, S39
  Credit, S35
  Doctor of Education Degree, S5
  Doctor of Philosophy Degree, S5
  Fees and Expenses, S26
  Graduate School, S4
  Living Accommodations, S17
  Master of Arts Degree, S5
  Master of Arts in Teaching Degree, S8
  Master of Education Degree, S7
  Master of Science Degree, S9
  Special Programs, S11
  Registration, S31
Surgery, M69

Teaching, U12
Theological Schools, Preparation for, U14
Theology Courses, D58, G108
Thesis
  Doctor of Education, G16
  Doctor of Forestry, F8
  Doctor of Philosophy, G12
  Master of Arts, G6
  Master of Arts in Teaching, G10
  Master of Education, G9
  Master of Forestry, F3
  Master of Hospital Administration, G11
  Master of Science, G7
Transfer of Credits,
  Engineering School, E49, E61
  Graduate School, G56
  Summer Session, S35
  Undergraduate Colleges, U51
Trustees, *dir*1

Units of Admission, U32, E33
University Counseling Center, S20, G36
University Courses, U124
University, History of, v
University Press Staff, *dir*62
University Stores, Officers, *dir*66

Woman's College Library Staff, *dir*70
World Christianity Courses, D57
Worship in Church Music, D61

Zoology Courses, G114, U124

1968

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S	M	T	W	T	F	S
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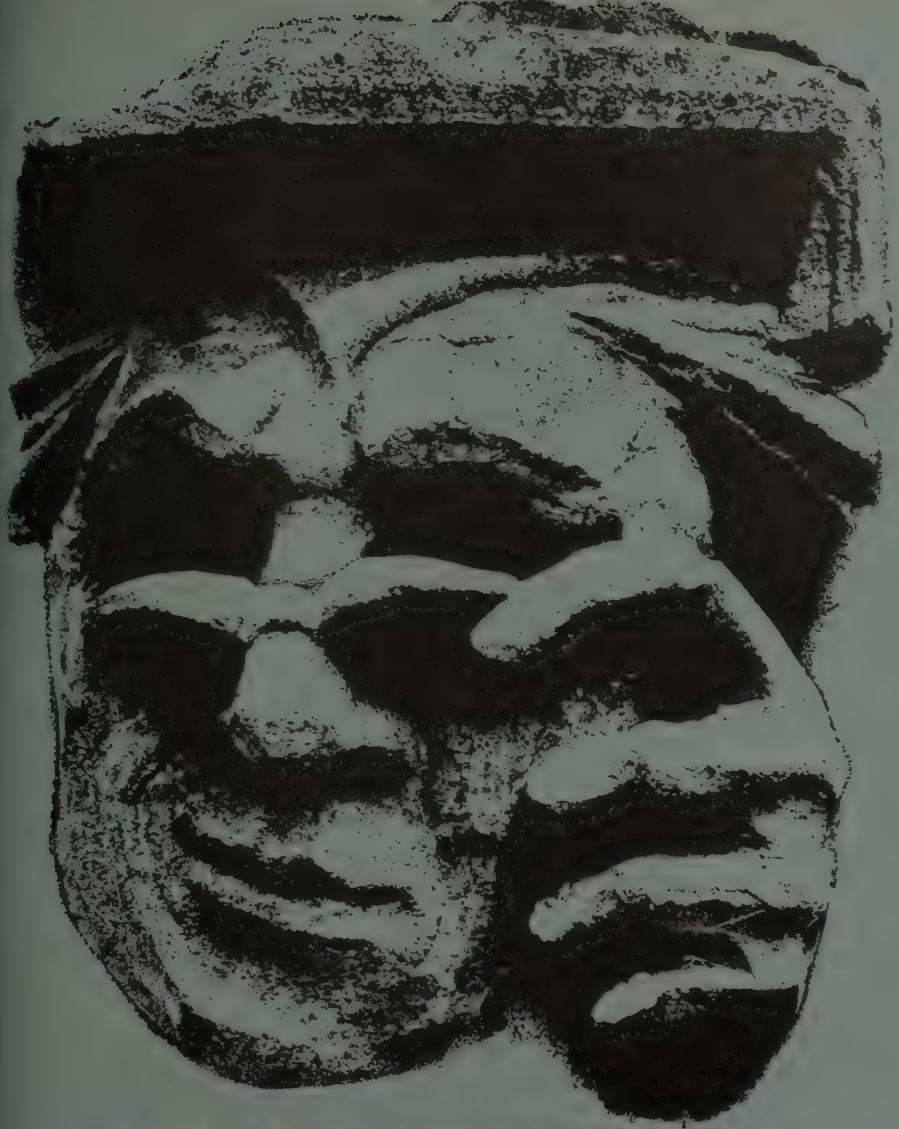
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The Woman's College

Information and Regulations
1968-1969

BULLETIN OF DUKE UNIVERSITY

Annual Bulletins

For *Bulletin of Information for Prospective Students*, apply to Office of Undergraduate Admissions, Duke University, Durham, N. C. 27706

For *Bulletin of Undergraduate Instruction*, apply to The Registrar, Duke University, Durham, N. C. 27706

For *Bulletin of The School of Engineering*, apply to The Registrar, Duke University, Durham, N. C. 27706

For *Bulletin of The Divinity School*, apply to The Dean of the Divinity School, Duke University, Durham, N. C. 27706

For *Bulletin of The School of Forestry*, apply to The Dean of the School of Forestry, Duke University, Durham, N. C. 27706

For *Bulletin of The Graduate School of Arts and Sciences*, apply to The Dean of the Graduate School, Duke University, Durham, N. C. 27706

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For *Bulletin of The Summer Session*, apply to The Director of the Summer Session, Duke University, Durham, N. C. 27706

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BULLETIN OF DUKE UNIVERSITY

Information and Regulations

The Woman's College 1968-1969

Durham, North Carolina 1968

This publication has been prepared as a guide for the student enrolled in The Woman's College, the entering student, and the prospective student who has been accepted for admission. It will be kept up to date as far as possible, but the College reserves the right to alter or supplement the regulations at any time.

Please retain this bulletin for ready reference during the year.

Table of Contents

Administration of The Woman's College *v*

General Information 1
The Woman's College in Duke University 1

Registration Information and Procedures 4
Pre-registration 4
Course Information for Registration 5
Grades and Quality Points 6
Final Registration 6
Identification Cards 6
Changes in Registration after Classes Begin 6

Academic Information and Procedures 8
Class Attendance and Excused Absences 8
Issuance of Grades 8
Declaration and Change of Major 9
Continuation Requirements and Graduation Requirements 9
Make-up of Examinations and Course Incompletes 10
Academic Honors and Awards 10
Study Elsewhere and Transfer of Credit 11
Transfer to or from Schools within Duke University 12
Change in Status 13
Withdrawal from College and Readmission 14
Release of Student Records 14

Resources for Information and Counsel 15
Administrative Offices of The Woman's College 15
Faculty Advising (Departmental) 17
Residential Counseling 17
Offices of the Chaplain and Religious Life Staff 18

Health Services of The Woman's College 19
Other Administrative Offices of the University 22

Living Accommodations 23
Residence 23
Food Services 25

College Regulations and Individual Responsibilities 26
Philosophy 26
Formulation and Modification of Regulations 27
Judicial Structure, Procedures, and Penalties 27
Regulations 29

Financial Information 36
Registration Fee and Deposits for New Students 36
Annual Fees and Expenses 37
Unpaid Bills 37
Financial Aid, Loans, and Scholarships 37

Appendices
A. Statutes of North Carolina Pertaining to the Possession and Use of Alcoholic Beverages 38
B. Drug Policy for Duke University 39
C. Statutes of North Carolina Pertaining to the Possession and Use of Certain Drugs 40
D. Federal Statutes Pertaining to the Possession and Use of Certain Drugs 42

Index 44

Administration of The Woman's College

M. Margaret Ball, Ph.D., Dean of The Woman's College
Jane Philpott, Ph.D., Dean of Undergraduate Instruction
Annie Leigh Broughton, M.A., Assistant Dean of Undergraduate Instruction
Virginia Schmitt Bryan, Ph.D., Assistant Dean of Undergraduate Instruction
Mary Grace Wilson, A.M., Dean of Undergraduate Women
Lillian A. Lee, M.S.Ed., Assistant Dean of Undergraduate Women
Louise Seabolt, A.M., Recorder
Elizabeth A. Persons, A.M., Director of Admissions
Dorothy Naumann, M.D., Physician
Nancy Richardson, A.B., Associate Director of Religious Life

Resident Associates

Annie Poignant, Lic., *French Corridor*
Diana Valiela Ward, A.B., *Spanish Corridor*
Karen Bickley, M.A., *Contemporary Arts Corridor*

House Counselors

Evelyn Conway Yeoman, M.A.T., *Addoms House*
Mary Helen Stasavich, A.B., *Alspaugh House*
Valerie S. Murdock, M.A.T., *Aycock House*
J'Nelle Gibson, M.Ed., *Bassett House*
Susan Mosshamer Armistead, B. Mus., *Brown House*
Karen Bickley, M.A., *Epworth Inn*
Johanna B. Rosenwald, candidate for M.A., *Faculty Apartments Building*
Jocelyn Regen, A.B., *Gilbert House*
Anna Bartel Cox, A.B., *Giles House*
Margaret R. Menning, M.A.T., *Graduate Center*
David Kathryn Wilborn, A.B., *Jarvis House*
Ellen M. Srodes, A.B., *Pegram House*
Margery S. Daniel, A.B., *Southgate Hall*

General Information

The Woman's College in Duke University

The Woman's College is the liberal arts residential college for undergraduate women in Duke University. It is a coordinate college in that it shares the same faculty, the same degree requirements and curricula and, for the most part, the same educational facilities with its counterpart, Trinity College for undergraduate men. There are approximately 1400 students in The Woman's College and almost twice this number in Trinity College. The total student population of the University (including its nine undergraduate and graduate colleges and schools) numbers about 7600.

As one of the coordinate colleges within the University, The Woman's College and its student body have autonomy to experiment with and develop programs, academic and otherwise, to encourage and support established goals and emerging interests. The administrative staff and student leaders of The Woman's College give continuing attention to ways of generating interaction of faculty and students to promote the learning process during the college years and to encourage wise planning for satisfying and continuing intellectual growth after graduation.

Almost all of the classes are coeducational. The full range of undergraduate course offerings, as well as the library and laboratory facilities of the University, are available to students in The Woman's College. The

two undergraduate colleges have coordinate administrations and, for the most part, separate residential areas.

Acknowledging the fact that the educational process goes beyond the classroom, The Woman's College functions as a corporate intellectual community in thirteen house groups. Each house has a resident counselor, who is a member of the administrative staff, and one or more faculty associates who are elected by the students in that house. Students in some of the houses are organized in living and learning groups. The foreign language corridors have resident associates who are natives of countries in which the languages are spoken. The other living and learning corridors have close affiliations with one or more faculty members in the disciplines of their special interests.

Through coeducational experiences in and out of the classroom and by judicious selection of courses from the wide offerings of the University, students in The Woman's College become aware that their abilities and capacities, and their interests, are not unique to women. Through discussions, seminars, symposia, visiting scholars-in-residence, and other media, however, women students become mindful of their increasing opportunities and unique roles as women in the present culture.

Students in The Woman's College participate in cultural, intellectual, and recreational activities within their houses, within the college community, and within the University community at large. Just as the students of The Woman's College enjoy both college and university facilities and engage in programs sponsored at both levels, they participate in local and unified student government: in the Woman's Student Government Association and in the Associated Students of Duke University.

The *Woman's Student Government Association,* WSGA, was founded upon the students' "Petition for Self Government" and the "Grant of Power" extended to them by the College, as published in the *Woman's College Handbook.*

The *Associated Students of Duke University,* ASDU, provides a framework wherein all undergraduate students discuss matters of common interest and take appropriate action concerning the welfare of the undergraduate student body as a whole. The constitution of ASDU which was ratified by the University in the spring of 1967 provides that "the Association shall not abridge the power of the college or school government to alter, maintain, or abolish whatever structures or organizations the members of the respective college or school communities deem necessary."

The spirit of the Duke campus is democratic. Full participation in campus affairs and high achievement in all areas are open to all students. Approximately one-half of the Woman's College students hold sorority membership (and the percentage of undergraduate fraternity men is about the same). There are no sorority houses.

This publication outlines procedures, regulations, and special op-

portunities for all students in The Woman's College. It is also designed to assist the prospective student who has been accepted for admission in deciding whether or not to confirm her acceptance to The Woman's College in Duke University. Students are referred to the *Duke University Bulletin of Undergraduate Instruction* for curricular matters, degree requirements, course descriptions, and information concerning special and cooperative programs of study; to *The Use and Acknowledgment of Sources* (a publication of the undergraduate colleges and professional schools); and to the *Woman's College Handbook* published by The Woman's College Student Government (for details of student organizations, etc.). Entering freshmen should consult the *Academic Guide for Freshmen* for procedures of pre-registration during the summer, details of advanced placement, selection of courses, and descriptions of majors. They are also referred to the *Freshman Week Program* for a calendar of events that take place on campus prior to the beginning of classes.

The publications mentioned above are released to entering freshmen as follows:

Bulletin of Undergraduate Instruction
Academic Guide for Freshmen — mailed in June

Woman's College Handbook
Freshman Week Program — mailed in August

The Use and Acknowledgment of Sources—distributed on campus in September

Registration Information and Procedures

Pre-registration

New students pre-register by mail during the summer preceding matriculation for their first college semester. An *Academic Guide* and preliminary registration materials are sent to all entering freshmen in June. By becoming familiar with these materials and with the *Bulletin of Undergraduate Instruction*, the student can plan an academic program. To accomplish pre-registration, course cards sent to each student are filled out and returned to the Dean of Undergraduate Instruction for Freshmen. It is understood, of course, that entering freshmen may change some course selections after they have received counsel during Freshman Week.

Continuing students are expected to pre-register at specified times for each successive semester. Prior to pre-registration each student receives by mail special instructions and registration materials. She prepares a trial course program and presents it at an appointed time to her faculty adviser or to a faculty member designated to assist her in reviewing it.

Any student who contemplates teaching in elementary or secondary schools should consult an appropriate member of the Department of Education prior to each pre-registration period to insure that she is meeting requirements for certification (many states have unique require-

ments) and that she will have a place reserved for her in her senior year in the student teaching program.

Those who pre-register at a time later than the day specified in the University calendar are subject to a $5.00 fine. Students who fail to pre-register are automatically withdrawn and must apply for readmission if they wish to return.

The registration deposit of $25.00, paid upon admission, is refunded to students who withdraw from College without pre-registering.

Course Information for Registration

Course Load and Eligibility for Courses

During each semester of the regular academic year, the academic program of an undergraduate student normally consists of four or five courses totaling fourteen to seventeen semester hours exclusive of physical education. Nineteen semester hours is the maximum course load. No resident student is allowed to take fewer than fourteen semester hours of work without the approval of her dean of instruction or to take more than the normal load of work unless her average grade in the preceding semester is higher than a "C."

Ordinarily, a senior may not elect for credit toward graduation any course open primarily to freshmen. Juniors may elect only one such course. See *Note* on page 59 in the *Bulletin of Undergraduate Instruction*, 1968, for course numbering system and departmental notes concerning prerequisites and eligibility for specific courses. The Graduate School rules that juniors with an overall B average who have written consent of the instructor as well as that of the Director of Graduate Studies in the department concerned may register for a 200 level course.

Course Audit

Written consent of the instructor is necessary for auditing a course. See the *Bulletin of Undergraduate Instruction* for details.

Pass-Fail Option

With the written consent of the instructor, a junior or senior may register for one elective course each semester on a pass-fail basis. See the *Bulletin of Undergraduate Instruction* for the application of grades ("P" and "U") to the cumulative average.

Grades and Quality Points

See the *Bulletin of Undergraduate Instruction* for the letter grading system, the assignment of quality points and the determination of the Duke cumulative average (DCU) and the total cumulative average (TCU) which are recorded on the permanent record of each student.

Final Registration

To complete registration each semester, students must report to the East Duke Records Office before 6:00 p.m. on Registration Day. Failure to report entails the loss of the $25.00 registration deposit which was paid upon admission and which ordinarily carries over from semester to semester. The student must then re-register. No student may attend any class until she has registered.

Changes in the schedule for which a student is pre-registered can be made on Registration Day in September and January. Procedures are announced by the Central Records Office.

Identification Cards

On Registration Day each student is issued a two-part Identification Card which she should carry at all times. It secures library privileges, student health services, entry into certain athletic events and admission to other functions to which student status entitles her. A student is expected to present her card at the request of any authorized official of the University.

ID cards are not transferable; misuse may result in loss of privileges or in suspension from the University.

Loss of ID cards should be reported immediately to the Office of the Dean of Women. The cost of a new ID card is $5.00.

Changes in Registration after Classes Begin

After registration, courses may be *added* only during the first week of classes. Red-striped cards for adding new courses are obtained from, and must bear the signature of, the appropriate dean of instruction. The student must then submit these cards to the Central Records Office.

After registration, courses may be *dropped* by obtaining red-striped cards from the deans' offices. These cards must be signed by the ap-

propriate dean, and submitted by the student to the Central Records Office for schedule change.

Courses are not officially dropped from the student's schedule until the Central Records Office receives the red-striped cards. If a student contemplates withdrawing from any course after the first week of the semester, she should discuss the matter with her instructor and her dean.

A student may drop a course without penalty within the early weeks of the semester if she is carrying a course overload. For freshmen this period extends to the time when six-weeks' grades are assigned; for upperclassmen it extends to November 1 in the fall semester and March 1 in the spring semester. For students not carrying a course overload, factors such as poor health or necessary outside work are taken into consideration in assessing permissible withdrawal from courses without penalty. A "W" is entered on the record in lieu of a grade when withdrawal without penalty is approved. After the above dates, withdrawal ordinarily results in an "F." A course dropped without approval at any time results in an "F."

Academic Information and Procedures

Class Attendance and Excused Absences

Students are expected to attend classes regularly and punctually. An instructor is privileged to refer to the appropriate dean a student who is causing her work or that of the class to suffer because of her absence or lateness.

Absences are excused for illness or for official representation of the College or University. (Absences are excused on grounds of illness only on the basis of information received from the College Physician, and on grounds of representation only if the official in charge of the event has made previous arrangements with the Dean of Undergraduate Women.) A student should seek to have an absence excused only in the event that she expects to miss or has missed an examination or that she is unable to turn in a paper at the time indicated by the instructor.

Issuance of Grades

Final grade reports are mailed at the end of each semester to all students and their parents or guardians. Six-week advisory grades are mailed only to freshmen and to their parents or guardians.

Declaration and Change of Major

A student may declare her major with her dean of instruction as early as the second semester of the freshman year; she *must* choose a major well before pre-registration in the second semester of the sophomore year. After declaring a major, the student consults a faculty adviser in her major department each semester during an announced pre-registration period.

Majors once declared may be changed by consulting the appropriate dean of instruction and registering the fact in her office.

Minimum Continuation Requirements and Graduation Requirements

An absolute minimum for continuation in The Woman's College is indicated below. Note that this is simply the minimum below which no student may continue and that the achievement of the minimum does not guarantee continuation.

The first to the second year.....18 s.h. credit and a TCU of 1.30
The second to the third year.....42 s.h. credit and a TCU of 1.60
The third to the fourth year.....66 s.h. credit and a TCU of 1.70
The fourth to the fifth year (if needed)..90 s.h. credit and a TCU of 1.80

Freshmen must pass at least six semester hours of work in their first semester, nine semester hours in the second semester, and a total of 18 semester hours in their first year; all other students must pass at least nine semester hours each semester. Physical education credits are excluded in each case.

At the end of each semester, members of the College Academic Advisory Committee review the records of all students in the College. Students with unsatisfactory records are given Academic Warning or are placed on Academic Probation. Students whose records do not meet the minimum requirements or show promise of graduation are not permitted to continue.

In addition to the completion of an approved curriculum, a student must meet the following minimum requirements for graduation: passing grades in 124 semester hours with 248 quality points and a TCU of 1.90. The work of the senior year must average at least 2.0.

The final four semesters—or equivalent—of work must be earned at Duke except in those instances in which a student has received approval to take her junior year abroad. A student who meets this requirement but who still lacks two courses (six to eight semester hours) in final fulfillment of requirements may take this work in another institution of ap-

proved standing, provided the courses are approved by the Director of Undergraduate Studies of her major department and by her dean of instruction.

Make-up of Examinations and Course Incompletes

When a student is absent from a final examination, she receives an "X" instead of a final grade. Unless the student presents an acceptable explanation for the absence to her dean of instruction within 48 hours of the scheduled examination, the "X" automatically becomes an "F". If the absence is excused, the student arranges with her dean and with the instructor for a make-up examination. An "X" not cleared by the end of the semester following the examination missed is converted to an "F".

If because of illness or other emergency a student's work *prior to the final examination* is incomplete, she may receive an "I" in the course instead of a final grade. Unless she completes the work before the end of classes in the next semester, the "I" automatically becomes an "F".

Academic Honors and Awards and Distinctions

Students of The Woman's College may qualify for the Dean's List, Class Honors, Class Scholars, Graduation Honors, Graduation with Distinction, as well as prizes and awards as announced in the *Bulletin of Undergraduate Instruction.* See the *Woman's College Handbook* for local and national honorary societies.

Several scholarships and prizes are administered by The Woman's College for students enrolled in the College. Applications for the scholarships are available in the Dean's Office, 115 East Duke, and they must be completed and returned by February 15. Applicants should apply for *one* specific scholarship *only.* Interviews are required of finalists in March.

Alice M. Baldwin Scholarships

One or more of these scholarships, varying in amount from $200 to $2,000, are awarded to rising seniors in The Woman's College on the basis of scholarship, character, and leadership. A confidential financial statement (except in case of those applying for an honorary award) must be filled out by the applicant's parents. A special green form should be filled out by a professor in the department of the applicant's major. A letter from the applicant's house counselor is also required.

Evelyn Barnes Memorial Scholarship

One $400 or two $200 grants are awarded to students in any class of The Woman's College who are contributing to the musical life of the University. Scholarship, character, and leadership are considered. A confidential financial statement is required for the $400 award. The green sheet should be filled out by a member of the music faculty or by the Director of the Chapel Choir. A letter from the house counselor is also required.

Panhellenic-Sandals Scholarship

A scholarship of $500 is awarded to a member of one of the three upper classes in The Woman's College on the basis of scholarship, character, leadership, and service. No financial statement is necessary, but the green sheet should be filled out by a faculty member, preferably one in the department of the applicant's major. A letter from the house counselor is required.

Delta Delta Delta Scholarship

A scholarship of $200 is awarded by Delta Delta Delta to a student in The Woman's College on the basis of scholarship and character. Only the special blank need be filled out. The winner of this award is eligible to compete for the national award of a Delta Delta Delta Scholarship of $1,000.

Study Elsewhere and Transfer of Credit

Transfer of Credit

The transfer of credit for acceptable courses completed in other accredited colleges may be arranged if grades not lower than "C" are earned. Although no grade is entered on the Duke record for work taken elsewhere, the total number of course credits transferred is recorded. For each credit hour, 2.0 quality points are allowed toward the meeting of graduation requirements. Quality points for transfer credit are incorporated in the TCU but not the DCU.

No credit is given for work by correspondence and no more than six semester hours are allowed for extension courses. The final four semesters —or the equivalent—of work must be taken and completed at Duke, except for work taken on an approved study abroad program.

Summer School Elsewhere

Summer school approval forms for courses to be taken at institutions other than Duke may be obtained from the offices of the deans of instruction.

A student wishing to transfer credit for summer work elsewhere at an *accredited* college should obtain approval of her course selections prior to taking the courses. She should present a summer catalog to her dean and to the Director of Undergraduate Studies in each discipline in which she proposes to take a summer course and request their approval.

Summer courses may be taken at an accredited junior college only if completed prior to the conclusion of the student's sophomore year at Duke. In general, students may transfer course credit for only as many hours of work as there are weeks in the summer session of the institution at which the course was taken.

Study Abroad

The Dean of Instruction serves as adviser to those students considering study abroad. After reading the pertinent sections of the *Bulletin of Undergraduate Instruction*, a student should consult with the Dean of Instruction with regard to Duke programs, programs sponsored by other accredited colleges, requirements, and transfer of credits.

Ordinarily, work to be considered for transfer credit must be done in the language in which courses are given in the institutions attended. A student must, therefore, be certified by the foreign language department concerned. With the dean's approval, a student in good standing may be granted a leave of absence to participate in a study abroad program and may count the credits transferred as part of the final four semesters required to be earned at Duke.

Reciprocal Agreement with the University of North Carolina

A maximum of two courses per semester may be taken at the University of North Carolina. See *Bulletin of Undergraduate Instruction.* The courses must be approved by the department concerned and the appropriate dean of instruction who initiates procedures for registration.

Transfer to or from Schools within Duke University

A student in good standing in the School of Nursing or the School of Engineering may transfer to The Woman's College if it appears probable that she can complete satisfactorily the requirements for graduation within the usual four-year period. She may already have incurred certain deficiencies, however, such as the lack of a foreign language course or other liberal arts courses, which will make transferring difficult. Only those students with a quality point ratio of 2.0 or higher can usually be considered for transfer.

A written request for transfer to The Woman's College should be submitted to the Dean of Undergraduate Instruction in The Woman's College by March 1 along with a written recommendation from the dean of the school in which the student is enrolled.

A Woman's College student considering transfer to the School of Nursing or to the School of Engineering should consult with the appropriate officials of the school as well as with her dean of instruction in The Woman's College.

Change in Status

From Resident to Non-resident

Students are expected to live on campus unless they reside with their immediate families. If a student marries while enrolled, a written request for a change to non-resident status must accompany her statement of marriage plans addressed to the Dean of Women. See the section entitled "General College Regulations."

From Non-resident to Resident

A non-resident student must apply to the Office of Admissions to be considered for resident status. The request must be made prior to March 1 for September residence and prior to December 1 for February residence. With the approval of the Dean of Women, a non-resident student whose record for the previous semester averages 2.0 and whose DCU is not less than 1.9 is eligible for resident status.

From Full-time to Part-time

Written request for change in status to part-time student should be addressed to the appropriate dean of instruction.

From Part-time to Full-time

A part-time student must apply to the Office of Admissions for a change in status to a full-time student.

From Non-degree to Degree Candidate

A non-degree student must apply to the Office of Admissions for a change in status to that of degree candidate.

Leave of Absence

An upperclass student in good standing may apply in writing to her dean of instruction to take a leave of absence for one or two semesters. She must apply before the end of the fall semester for a leave of absence during the spring semester, and before August 1 for a leave of absence during the fall semester. If the leave is approved, the student must keep the Dean of Instruction informed of any change of address. Ordinarily, no leaves are approved for residence in the Durham area. The student is

advised to keep a *Bulletin of Undergraduate Instruction* in her possession so that she may pre-register by mail for the semester when she plans to return. Pre-registration materials will be mailed to all students on leave of absence. A student failing to pre-register will be withdrawn from the University and will have to apply for readmission.

Withdrawal from College and Readmission

If a student withdraws during the academic year, she must confer with the appropriate dean of instruction and have her parents send a letter of affirmation. A withdrawal at student initiative, prior to the Christmas recess in the fall semester or prior to April 15 in the spring semester, is recorded as voluntary, and a "W" is entered in lieu of a grade for each course. A voluntary withdrawal after these dates is approved only in the event of an emergency beyond the control of the student.

Unless the student has a leave of absence, she must apply to the Office of Admissions for readmission. Applications for readmission in February are due not later than December 1; for readmission in September, not later than January 15. Non-resident students may apply as late as August 1 for readmission in September. Applications are reviewed by the Academic Advisory Committee of The Woman's College on the basis of the student's previous record at Duke, her prospect for completing graduation requirements, her health, her activities in the interval since withdrawal, and finally, her relative standing among the group of students applying to return. Decisions on readmission are conveyed to applicants by the Office of Admissions.

Release of Student Records

No confidential information contained in student records (academic or otherwise) is released to persons off-campus nor to unauthorized persons on the campus without the consent of the student. Consent is evidenced by each student's signing a form entitled *Authorization of The Release of Personal Data.* The form may provide for the release of information to one or more persons or agencies only, or it may be a blanket release. Blank forms to authorize or revise the permission are available in 118 East Duke.

The one exception to the confidentiality of student records is that grades of freshmen are sent to their high schools so that guidance counselors may evaluate the success of their counseling. If a student wishes to withhold her grades from the high school counselor, she should submit her request in writing to the University Registrar.

Resources for Information and Counsel

To inform students of the organization of various offices and to insure that each student receives the opportunity to make maximum use of her skills and abilities within the resources of the University, the available offices, services and routines are outlined below.

Administrative Offices of The Woman's College

The Dean of The Woman's College

The Dean of The Woman's College has overall responsibility for the College and the educational experience and welfare of students. She works with various officials of the University on matters of general policy and delegates responsibilities within the College to the members of the staff of The Woman's College. She meets regularly with the President of The Woman's College Student Government and consults as needed with the Chairman of the Judicial Board of the student government and with other students desiring her counsel or the college support in developing and implementing various programs.

The Deans of Undergraduate Instruction

The Deans of Undergraduate Instruction work primarily with students and members of the faculty to promote interaction between the intel-

lectual resources of the students and those of the College and the University. Since there are many ways to satisfy requirements for the A.B. and the B.S. degree, the deans of instruction help the student to fashion her course selections and activities to fit her needs and goals. She often guides students to faculty advisers or other counselors and resources herein described. The offices of these deans serve as clearing houses for many procedures such as approval of courses to be taken elsewhere, the dropping and adding of courses, withdrawal from college, etc. The deans of instruction often write recommendations for students in support of their applications or candidacy for employment or for further study. The three deans of instruction work respectively with freshmen, sophomores, and juniors-seniors as follows:

Academic Counseling for Freshmen. A dean of instruction counsels with freshmen before they arrive on campus via the *Academic Guide for Freshmen* and through summer correspondence with them to implement preliminary selection of courses for the fall semester. During Freshman Week, she confers with freshmen directly and through members of the Freshman Advisory Council and arranges for faculty members to serve in various ways in an advisory capacity. Throughout the year she consults with freshmen on academic and related matters and works closely with the officers of the freshman class to arrange ways to help freshmen elect majors and define their goals. She is available to the uncertain freshman as well as to those who are casting about for additional intellectual challenge.

Academic Counseling for Sophomores. A dean of instruction counsels with sophomores toward the use of curricular offerings in fulfilling degree requirements. Much of her counsel pertains to the setting of lifetime goals (academic, career and home oriented) as the sophomores prepare to declare or change majors. She serves on the Educated Woman Power Committee which presents programs of interest to women planning for their future. She also works with the Dean of The Woman's College in bringing outstanding woman scholars as visitors to the campus. She coordinates events of Sophomore-Fathers' Weekend as well as various aspects of an Internship Program in Community Service. She works closely with students to help make their college experience relevant to the world community and its needs.

Academic Counseling for Juniors and Seniors. A dean of instruction counsels with juniors and seniors as they complete requirements for the A.B. or B.S. degree and as they plan for graduate and professional schools and/or life occupations. In consultation with the Dean of the College and with the assistance of the other deans of instruction, she is responsible for such co-curricular programs as the foreign language corridors and other living-learning corridors. She serves also as pre-medical adviser and, as a member of the University Committee on Study Abroad, she counsels with students as they make plans for study abroad during

one or more summers or for one or both semesters of their junior year. She certifies to the Dean of The Woman's College the completion of degree requirements of senior students in the College.

The Dean of Undergraduate Women

The Dean of Undergraduate Women and her staff are primarily concerned with the well-being of students and with developing a residential community supportive of the best educational experience. The Dean works closely with House Counselors, the Chairman of the Judicial Board of the Woman's College Student Government and with elected officers of various other organizations. In her office, social functions are registered and the use of college facilities is approved and scheduled. She is available for counsel concerning personal and community needs.

The Assistant Dean of Undergraduate Women is responsible for room assignments and room charges. She works with the treasurers of student organizations whose funds are deposited with the University Bursar's Office and she helps students find part-time employment.

Faculty Advising (Departmental)

A student should not hesitate to discuss her academic program and career goals with any faculty member she comes to know. Assistance with technical questions about major requirements, course prerequisites, etc., however, are best addressed to the *Director of Undergraduate Studies* in the appropriate department or to a faculty member who has been designated as the student's *major adviser* in the department. (A student is assigned a departmental adviser prior to the first pre-registration period after she declares or changes her major.) Questions pertaining to freshman instruction can be addressed to the *Supervisor of Freshman Instruction* in most departments. The names of faculty members serving as directors of undergraduate studies and supervisors of freshman instruction may be found in the *Bulletin of Undergraduate Instruction.*

Formal advisory arrangements are most in evidence at times of pre-registration when course programs must meet criteria of balance, satisfaction of prerequisite courses and progress toward graduation. See the section "Pre-registration."

Residential Counseling

House Counselors

The house counselors are members of the administrative staff of The Woman's College. They share with the students the responsibility for the

satisfactory administration of the house and its program. Since the house counselor has an apartment in the dormitory, she is the College representative most readily available to resident students. If she is not in her own apartment, the receptionist at the house desk knows where she can be found. When she is out of reach, her counterpart in another house or the Dean of Undergraduate Women may be called. Should a student need specialized advice or counsel, the house counselor promptly refers her to the appropriate person or service.

Freshman Advisory Council

This student council is composed of rising juniors and seniors who are selected for qualities of responsibility and leadership. Each member of the FAC is assigned to a small group of freshmen within her house. During Freshman Week she welcomes her group and acquaints them with the College and the University. Throughout the year she remains a resourceful friend for her group.

Faculty Associates

These faculty members are elected by each residential house on The Woman's College Campus. Although they do not live in the houses, they and their families are closely associated with the life of the house. They attend social events, and are sometimes asked to lead discussions or otherwise contribute to programs of the house. Often they entertain small groups of students in their homes.

Offices of the Chaplain and Religious Life Staff

The Chaplain of the University

The chaplain is also the Director of Religious Life. The religious life staff consists of a director, two associate directors, and the chaplains of several faiths.

The Associate Director of Religious Life

The associate director for The Woman's College serves also as Director of the Y.W.C.A. In addition to questions of religion and faith, she and the chaplains entertain inquiries on ethics and moral standards as well as inquiries about personal problems and conflicts. They help the student clarify the essentials of the questions, guide her toward the discovery of answers, and in some cases guide her toward asking better questions. They may suggest reading materials or they may refer the student to other sources of help.

Health Services of The Woman's College

Located in The Woman's College Infirmary, the Student Health Service provides out-patient care for illness, injury, or emotional disturbances, as well as limited hospitalization. Additional care is provided at the Duke University Medical Center when indicated. The facilities of The Woman's College Health Service are available to all fulltime undergraduate women who are registered in The Woman's College and the College of Engineering while they are on campus.

Services Provided By Student Health

1. Unlimited out-patient visits to the Clinic.
2. Hospitalization in the Infirmary or Duke Hospital up to a maximum of thirty days.
3. Routine laboratory and X-ray examination necessary to treat or diagnose acute illness or injury.
4. Most drugs, but charges are made for certain hormones, steroids, special immunizations, and allergens.
5. Consultation with specialists in the treatment of acute illnesses or injuries when referred by the College Physician. All referrals to Duke Clinics or Duke Hospital, under provision of the Student Health Service, *must be authorized* by the College Physician before the student reports to the Duke University Medical Center. Occasionally, in the case of an accident, the student may be taken directly to Emergency at Duke Hospital (See *Emergency Service*).
6. Health examinations required for practice teaching, advanced studies, scholarships, and educational programs are made without charge and by appointment by the College Physician. For other purposes such as travel abroad, work, insurance, etc., physical examinations are provided at the student's expense.
7. Immunizations for travel abroad may be arranged at the student's expense at the Private Medical Diagnostic Clinic at the Duke Medical Center. (Immunizations require a minimum of from one to six weeks to complete.)
8. Psychiatric consultation and evaluation. See *Student Mental Health Clinic.*

Services Not Provided By The Student Health Service

1. Eye examinations, lens prescriptions, or contact lens problems.
2. Dental care.
3. Treatment of dermatologic conditions other than acute problems.
4. Elective treatments or elective surgery.
5. Treatment of pre-existing or chronic conditions (illness or disability

acquired by the student previously). The Health Service does, however, provide a limited amount of care and supervision of these conditions, and will make arrangements for the services of a specialist at the student's expense.

6. Filling of prescriptions.
7. Financial obligations for private physician's fees.
8. Treatment of automobile accidents and injuries off campus. Since the Student Health Service does not cover expenses incurred in the treatment of these injuries, students are urged to carry appropriate insurance. (See *Health and Accident Insurance.*)
9. Immunizations for travel abroad. See Item number 7 under *Services Provided by Student Health.*

Out-Patient Clinic

The College Physician is on duty in the Out-Patient Clinic in The Woman's College Infirmary during the following hours:

Monday through Friday	Saturday
9:00 a.m.—9:30 a.m.	9:00 a.m.—10:00 a.m.
11:00 a.m.—12:00 noon	
1:00 p.m.—1:30 p.m.	
3:30 p.m.—4:30 p.m.	

See *Emergency Service* for patient care outside of clinic hours.

Hospitalization

See *Services Provided by Student Health.*

Student Mental Health Clinic

The Mental Health Clinic, located in The Woman's College Infirmary, is staffed by a psychiatric social worker and psychiatrists who are members of the Department of Psychiatry of the Duke Medical Center. Confidential psychiatric consultation and evaluation is available to any student concerned about her emotional health, reactions to crisis situations, or disturbing worries or feelings which persist and interfere with her adjustment at Duke; or a student may come to the service simply to clarify her thoughts or feelings. The student may be encouraged to solve her problems for herself for her own emotional growth or she may be assisted by continued discussions for a few additional visits. The diagnostic and treatment resources of the Medical Center, such as clinical psychological testing, special laboratory procedures, long term psychotherapy and group therapy, are available to the student upon referral by the staff of the Student Mental Health Service.

Appointments may be made by calling the clinic secretary, extension 2958, or by visiting the clinic between 1:00 p.m. and 5:00 p.m., Monday through Friday. Self referral is welcomed and encouraged. Other campus counseling resources, including the house counselors, The Woman's College physician, and the chaplains, are available, and in an emergency may be called at any hour of the day or night and on week ends. Psychiatrists are on call for psychiatric emergencies in the Emergency Room of the Duke Medical Center at night and on weekends. See *Emergency Service.*

Information regarding other programs of the Student Mental Health Service, referral procedures, or other psychiatric resources in the area may be obtained at the clinic.

Emergency Service

If, because of illness or injury, it is necessary for a student to come to the Health Service other than clinic hours, she should report to the nurse on duty on the second floor of the Infirmary. A doctor, on call for emergencies 24 hours a day, will be contacted by the nurse whenever necessary.

If a student is ill or injured in her dormitory, her House Counselor should be called. The Counselor will then make arrangements with the Health Service to have the student brought either to the Infirmary or Duke Hospital as indicated. No illness is treated in the dormitory.

If the House Counselor is not available, the Health Service should be called (3367) and the nurse on duty should be given the name and location of the student and the nature of the emergency. She will then make arrangements for the care of the ill or injured student.

Emergency transportation of an ill or injured woman student to the Infirmary or Hospital by Security Police (2444) or ambulance is available when necessary.

Health and Accident Insurance

A supplemental insurance program, The Duke Insurance Plan (Walker Insurance Agency) is available to the student at a nominal charge. This insurance provides for accidents and for hospitalization for the medical care of illnesses which occur off campus and during vacation periods, and for certain services not covered by the provisions of the Student Health Service. It is recommended that each student carry this additional coverage unless she is protected by other family policies.

Students covered by Blue Cross-Blue Shield or other hospitalization insurance are requested to bring with them the name, address, and certificate number of their policies.

University Counseling Center

Here the student may be assisted in gaining a better understanding of herself and the educational opportunities available to her. Counseling services may be helpful in improving study skills, in developing greater self-understanding, in developing more effective social relationships, and in choosing a career. The professional counselors in the Center release counseling reports only to those persons specifically designated in writing by the student concerned.

The Appointments Office

This bureau serves as an intermediary between students and prospective employers by making available information about job opportunities for summer and permanent employment. Appointments may be made for interviews with representatives who come to the University each year from hundreds of companies and schools. Information regarding educational as well as business opportunities is available.

Students are urged to register with the Appointments Office early in the year in which they seek employment. Permanent files, containing letters of recommendation and records of academic achievement, training, experience, extracurricular activities and honors may be made available, at the student's request, to prospective employers. Personal interviews for information and counseling are available to students after they have registered with the Appointments Office.

Living Accommodations

Residence

Woman's College students and undergraduate women in the School of Engineering live in residence houses on campus unless they reside with their immediate families. Dormitory space is provided for all students unless otherwise made explicit at the time of admission.

Thirteen residence houses afford both single and double rooms, although some of them have very few singles. See the *Woman's College Handbook* for information about each house or dormitory. Most of the housing units have a full representation of all four classes. Some of the houses are devoted to living-learning corridors where upperclass students are grouped together according to special interests. One floor of the "Graduate Center," which is located on the West Campus near the dormitories of the School of Nursing, houses approximately 120 Woman's College students. (Another section of the "Graduate Center" is occupied by graduate women students and the remaining section of the building is assigned to men students enrolled in the Graduate and professional schools.)

The Living-Learning Corridors for 1968-69 include Foreign Languages (French and Spanish), Science, Contemporary Arts, Mass Media, Africa, the Society of the Seventies, and Harambee. Members of Harambee nurture and share diverse intellectual interests of its members. The emphases of the living-learning groups change with the interests of the

students and the availability of supporting funds. Both a House Counselor and one or more Resident Associates are in residence in these buildings. Admission to a particular program is open to qualified students upon application and approval of the appropriate committee.

Entering students may state dormitory and room size preference; however, as returning students have first choice of rooms, no guarantee is made that new students can be assigned space according to their choices. After the initial assignment students must themselves make arrangements for roommates from among their friends or accept single rooms.

Room changes are made in the dormitory by prearrangement with the House Counselor and the authorization of the Assistant Dean of Women. An unofficial room change will make the student liable for payment of rent for both rooms for the period involved.

Dormitory accommodations are provided during Thanksgiving and Spring vacations and the greater part of the Christmas holidays, but all houses are closed between the winter and summer sessions.

Notification of the dates on which dormitory rooms may be occupied by both new and returning students is sent to all students in August. All rooms must be vacated within 24 hours of the student's last obligation, e.g., examinations, or 24 hours after Commencement for graduating seniors.

Rooms are not rented for a period shorter than one semester.

Upon arrival each student is expected to report to the appropriate dormitory office and to make a refundable $1.00 deposit for a room key. See the section "Financial Information" concerning room rent and room deposit.

Storage

All trunks and heavy luggage must be stored within two weeks after room occupancy in rooms provided. Limited storage facilities are available during the summer to students who have pre-registered for the fall semester.

While reasonable care is exercised, the University does not carry insurance on the personal properties of students and assumes no financial responsibility for damage to or loss of such properties.

Care of Rooms and Furnishings

Limited maid service is provided in the dormitories, but each student is responsible for the care of her room and furnishings and, as a condition of occupancy, for keeping the room reasonably neat and orderly. The University reserves the right for a member of the Housekeeping Staff to enter and inspect the condition of any student's room. Students are held responsible for damage that occurs in the room and repair costs will be

assessed the occupants. No tape or tacks may be used on the walls or woodwork. Wall decorations must be hung from regulation molding hooks.

Food Services

All resident women students, except the upperclassmen who are assigned rooms in the Graduate Center, West Campus, are required to contract for their meals in University dining rooms on a semester basis. On the East Campus these dining rooms are located in the Union and in Gilbert-Addoms dormitory; on the West Campus they are in the Graduate Center. The board fee covers three meals per day during the regular term exclusive of vacations. Provisions are made for the Woman's College students to take their evening meal in the Great Hall or the University Room of the West Campus Dining Halls or in the Graduate Center Dining Hall when they wish to do so. Meal tickets for guests may be purchased at the dining hall. Snack bar service is available on the East Campus in The Woman's College Store, and on the West Campus in the Graduate Center. See the *Woman's College Handbook* for dining hours.

College Regulations and Individual Responsibilities

Philosophy

The liberalization of social regulations in recent years reflects a shift in focus of responsibility more than it reflects changes in behavior and habits of students. Liberalized regulations indicate respect for individual integrity and freedom of the individual to make choices and to determine personal schedules and codes by which to live. Because of individual differences and the responsibility of the College for safety, health and a learning environment, however, certain regulations are enforced by the community itself. Within the bounds of the regulations, the student is expected to chart a healthful and reasonable course conducive to high standards of scholarship.

In the spring of 1967, the *Woman's Student Government Association* reemphasized a code of honor and formally adopted the following "Honor System":

"As members of The Woman's College of Duke University we commit ourselves to the principle of honor. With full realization of the responsibility inherent in membership in this community, we agree to live by a system based upon that principle.

"The system embodies the concepts and obligations that each student

must accept all community regulations, regardless of personal disagreement, and must report any personal violation. Furthermore, each student must share in the responsibility to protect the system by encouraging other students to live up to their obligations by speaking to a person who has violated a regulation, reminding her of the responsibility to report oneself."

Formulation and Modification of Regulations

The regulations of The Woman's College are administered and revised by the student Judicial Board in cooperation with the administrative staff of the College. Any student, or group of students, may recommend a change or changes in the regulations by presenting a petition to the Judicial Board.

Judicial Structure, Procedures, and Penalties

A *House Judicial Committee*, of elected members of each house, handles minor infractions by students within its house.

The *Judicial Board* of The Woman's College Student Government Association exercises the authority delegated to students by the College to adjudicate serious cases of misconduct and/or violation of the regulations of the college. In cases judged to warrant suspended suspension or separation from the College, however, the Judicial Board presents its findings and makes its recommendations to the Discipline Committee. Consult the *Woman's College Handbook* concerning the election of the judicial bodies.

The Judicial Board has initial jurisdiction over the following violations:

Overnight absence with failure to follow Leave Card procedures
Falsification of Leave Card
Falsification of In-and-Out Card
Opening end door after house closing
Plagiarism, cheating, theft, perjury, falsification, and misrepresentation
Violation of the Picket and Protest regulations
Violation of drinking regulations
Violation of automobile regulations
Violation of library regulations
Misuse of ID card
Causing hazard or embarrassment to members of the College community, or creating a social disturbance.

The *Discipline Committee* is appointed and chaired by the Dean of The Woman's College. Its membership is representative of the student body, the faculty, and the administration. The Committee reviews the decisions of the Judicial Board in all cases in which suspended suspension or a more serious penalty is recommended by the Judicial Board and in all cases of academic dishonesty, and violation of the picket and protest regulations. Members of the *Discipline Committee* and members of the *Judicial Board* meet together on occasion to discuss college problems and the development of policy.

Violations of academic and community regulations are considered serious offenses and are subject to judicial action which may involve the penalties of Suspended Suspension, Suspension, or Expulsion. Suspensions and expulsions require involuntary withdrawal from the University, and the action is recorded on the official academic record of the student.

Judicial Procedures provide that:

1. The accused has the right to be faced by the accuser or by a written report of the accuser.
2. The accused is to be given written notice of the charges against her at least 48 hours before the hearing. The accused may waive the formal notice and the 48 hour notification period. If she desires additional time in which to prepare her defense, she may ask for and be granted a delay of the hearing.
3. The accused has the right to offer testimony, introduce documents on her behalf, and bring with her one character witness (a member of The Woman's College student body) and such material witnesses as she deems necessary.
4. To avoid self-incrimination the accused has the right to remain silent in answer to a question.
5. The accused is reminded that she will be on her honor to give only truthful testimony and that failure to do so will constitute perjury.
6. The case will be presented to the Judicial Board by the student's Judicial Representative or the Chairman of the Judicial Board, who will relinquish her vote in such case. The accused is to be made aware of any information which the Board will consider and is to be told the grounds for the determination of any finding or penalty imposed.
7. The accused may appeal any decision of the Judicial Board.
   a. The appeal must be made in writing within 48 hours after which time the decision is final.
   b. The lines of appeal are as follows:
      Judicial Representative
      House Judicial Committee
      Judicial Board

Discipline Committee
Dean of Arts and Sciences of the University

8. The Judicial Board will rehear any case in which significant new evidence can be introduced. By a two-thirds vote, the Board may decide to rehear such a case.

Regulations

Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct.

The University wishes to emphasize its policy that all students are subject to the rules and regulations of the University as currently in effect or from time to time put into effect by the appropriate authorities of the University.

Any student, in accepting admission, indicates his willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the University.

College regulations go into effect when the student arrives in Durham for the academic term and continue in effect throughout the college year. Changes made during the school term are effective in the ensuing academic year.

Community Regulations

Integrity

Consistent with the principle of Honor, the community cannot tolerate:

Plagiarism or Cheating (See *Use and Acknowledgement of Sources.*)

Theft

Perjury (failure to give truthful testimony before any Woman's College judicial body or Judicial Board member)

Falsification or Misrepresentation (including Special-Leave Cards, In-and-Out Cards, library slips, laundry slips)

Misuse of Student Identification Cards (If both parties involved in the fraudulent use of the I.D. Card are Woman's College students, both the student who lent her card and the one who borrowed it for purposes of misrepresentation will be held responsible.)

Nondiscrimination and Off-Campus Facilities

As University policy prohibits discrimination in any way on the basis of

race, creed, or national origin, it is required that University personnel and campus organizations govern themselves accordingly. This covers the official activities sponsored, financed, and controlled by these groups whether the activities are held on or off campus. If they are held off campus, the use of facilities where discrimination is practiced is prohibited. Individual students, faculty members, or private groups are free, of course, to conduct their personal affairs as they see fit.

Campus Trespass

Except for through traffic using the drive between the East and West campuses, the Woman's College campus is closed at night to non-residents after 2:00 a.m.

Violators are liable to arrest by Campus Officers, who are deputies of the Sheriff of Durham County, and to prosecution as trespassers.

Possession and Use of Alcoholic Beverages

In the State of North Carolina it is unlawful for persons under twenty-one years of age to purchase, possess, or use certain beverages containing alcohol. The University neither condones the illegal purchase or use of such beverages by its students nor countenances the serving of them to students under age. Moreover, it prohibits the consumption by any person or persons of these beverages on the University's grounds or in its nonresidential buildings. Within these limits, the University is prepared to leave to the individuals directly concerned the decision whether or not lawfully to possess or drink the beverages in question in the residential unit. The living group remains responsible for the general tone of each area of residence, however, and may by majority vote adopt house regulations more limiting than the laws of the state.

The attention of all students is called to sections of the General Statutes of North Carolina (See Appendix A).

Possession and Use of Certain Drugs

The sale, possession, or use of drugs in violation of the law is prohibited (See Appendices B, C, and D).

Social Disturbance

Any individual who causes hazard or embarrassment to members of the community or College, or who creates a social disturbance, will be subject to Judicial Board action.

Pickets and Protests

The University policy pertaining to pickets and protests is in the process of reformulation and will be distributed to all students.

Dormitory Regulations

September Arrival

A student may not return to campus or begin moving into the dormitory in September before the official opening of the College to upperclassmen unless she is authorized to do so by the dean in charge of Freshman Week or by the Dean of Women.

Quiet

Quiet conditions are vital for study and sleep in an academic and residential community and can be maintained only through the cooperation of every individual. Reasonable quiet must be maintained in the houses and on campus at all times. Lack of cooperation in this matter is cause for judicial action.

Hours for Dormitory Residents

Opening hour: 6:30 a.m.
Curfew for Sophomores, Juniors, and Seniors: 2.00 a.m.
Curfew for Freshmen:
  First Semester, before the mid-term:
    Monday-Thursday: 11:00 p.m.
    Friday, Saturday: 2:00 a.m.
    Sunday: midnight
  After mid-term, and Second Semester:
    Sunday-Thursday: midnight
    Friday, Saturday: 2:00 a.m.

Woman's College students living in the Graduate Center must be on their hall by curfew. (The parlors in the Graduate Center are open until 2:00 a.m. every night.)

Curfew for all students during official vacation period and during the last week of classes and the final examination period each semester is 2:00 a.m.

Whenever a student realizes that she will be late, she must telephone the dormitory immediately.

Extension of Curfew

A student may request late permission from her House Counselor. This permission requires a specific time of expected return and must be approved in advance; permission may not be granted over the phone.

To attend an on-campus Duke University function which may extend past her curfew, a student may sign out to return immediately after the end of the function.

Hours for Men Visitors

Men visitors may call for students after 8:00 a.m. (9:00 a.m. on Sundays), and may be entertained in public parlors after 10:00 a.m. and until 11:00 p.m. Monday through Thursday; 2:00 a.m. Friday and Saturday; and midnight Sunday.

Men visitors may not enter the private quarters of the dormitories without permission of the House Counselor and announcement.

Visiting Men's Residences

A woman student may go into a men's dormitory on West Campus only when visiting hours have been approved and posted in The Woman's College dormitories.

Absence

In order that a student may be located in case of necessity, absence from campus must be registered in complete and correct detail. It is the student's responsibility to notify the house receptionist of changes in plans so that her sign-out or Special Leave Card is a true indication of her whereabouts and expected time of return. Only the house receptionist may correct or complete the card.

Signing In-and-Out

The In-and-Out Card must be filled out completely and legibly any time the student leaves the Durham-Chapel Hill area or plans to return to the dormitory after midnight. It is *recommended* that the student sign out when leaving the Duke campus to return after 7:30 p.m.

If a student forgets to sign out, she may telephone the house receptionist who may sign her out. However, each student must sign herself in upon her arrival.

In the interest of the student's safety, signing out should be as specific as possible as to destination, companions, conveyance, and time of return. Regardless of the hour, students must call in if they are delayed beyond the house closing hour.

Special Leave from Campus

The Special Leave Card is a record of the student's whereabouts when she is spending the night out of the dormitory. (This includes spending the night in another Woman's College dormitory, the Infirmary, or Hanes House, or at a registered social function on the East Campus.)

Every student must discuss her plans with her house counselor in order to spend the night in the Raleigh-Durham-Chapel Hill area unless she is with her own family, in the residence of friends where the hostess is

present, or in an approved guest lodging (see Dean's Bulletin Board). The student herself must assume the responsibility for completing a Special Leave Card for such absences.

Although the student is responsible for her own plans, it is expected that she will discuss with her parents any limitations which they feel she should recognize.

As a guide to adjustment to college life, freshmen must have their Special Leave Cards for off-campus absences countersigned by their respective house counselors.

A student who plans to be absent from the University for more than a week must consult the appropriate dean of instruction or the Dean of Women before leaving the Campus.

Late Arrivals

A student is expected to return from an over-night trip by her curfew. Special arrangements for returning after that hour must be made in advance in the office of the Dean of Undergraduate Women.

In any event, if a student is returning after 2:00 a.m., she should telephone the East Campus Police (ext. 2444) as soon as she arrives in the city of Durham, and ask to be admitted to her dormitory, giving her name and number of her taxi. (The night before classes are resumed after *regular* vacations students may go directly to East Duke Building upon their arrival. Security Officers will be on duty there throughout the night to admit them to their houses.)

Open Houses

Each dormitory may elect by a secret, affirmative vote of the majority of its members to open the living area to men visitors for specific visiting hours. The House Counselor must be consulted in advance to make certain that she will be in the building, the open house must be registered in the office of the Dean of Women, and other prescribed procedures as posted in the dormitory must be followed. The House must assume full responsibility for each open house.

Guests

A student may have overnight guests in the house only when she herself will be there to assume the responsibilities of the hostess. She must inform her guest of the College Regulations and must assume the responsibility for any infraction of the rules by any guest other than a Woman's College student. No overnight guest may be entertained in the dormitories during Freshman Week or during the examination period.

The College reserves the right to ask a guest to leave if she does not abide by the rules.

Meetings in the Dormitory

All meetings held in the dormitory living rooms must be approved by both the House President and the House Counselor.

Use of Dormitory Rooms during Vacations

The College reserves the right to use the dormitory rooms during announced vacations for special guests.

General College Regulations

Social Functions—Registration

All organized activities, lectures, field trips, conferences, retreats, house and beach parties, etc., must be registered and entered on the official calendar in the office of the Dean of Women. The chairman of the host group is responsible for this registration.

Motor Vehicles

Upperclass *resident* students, who register their cars (or motor scooters or motorcycles) in the Office of the Dean of Women may have such vehicles or the continuous use of them.

An annual parking rental fee of $30.00 for automobiles and $10.00 for motor scooters and motorcycles is payable upon the registration of the motor vehicle in the fall.

All *non-resident* students are eligible to have motor vehicles and, upon registration, to have campus parking privileges free of charge.

Marriages

Any student planning to continue her studies at Duke after marriage must inform the Dean of Women promptly, arrange for off-campus housing, and supply her new address. If the marriage is to occur during the academic year, the Dean of Women should be informed before the marriage takes place; if prior notification should be impossible, however, the Dean is to be informed of the marriage immediately. The student may forfeit her place in the College if she fails to observe these regulations.

Conferences, Conventions, etc.

Invitations to individuals or to organizations outside the University to attend or hold meetings on The Woman's College Campus must be discussed with and approved by the Dean of Undergraduate Women well in advance of the extension of the invitation by the prospective host or

host group at Duke. It is the established policy of The Woman's College not to use its dormitory facilities for the housing of convention guests.

Commencement Week

During Commencement Week a freshman or sophomore may not remain in residence longer than 24 hours after her last examination except by permission of the Dean of Undergraduate Women or her representative.

Financial Information

Fees paid by students cover only a part of the cost of their instruction and of the operations of the University. Income from endowment and contributions from foundations, alumni and other friends cover the balance, which constitutes more than half of the total cost.

Registration Fee and Deposits for New Students

Upon notification of acceptance new students are required to pay, by a deadline, a non-refundable first registration fee of $20.00 and to make a deposit of $50.00. The deposit will not be refunded to accepted applicants who fail to matriculate.

For matriculated students $25.00 of the $50.00 deposit made at the time of acceptance serves as a continuing room deposit and the remaining $25.00 as a continuing registration deposit. The $25.00 pre-registration deposit is refunded to students (1) whom the University requires to withdraw, (2) who are graduated, or (3) who request the refund at the time of pre-registration, thus indicating their intention not to return for the following semester. The $25.00 room deposit is refunded within 30 days after a student's graduation or upon withdrawal from one of the residences, provided the student has given written notice to the Office of the Dean of Women by August 1 to cancel a reservation for the fall semester and not later than January 15 for cancellation of a reservation for the spring semester.

Annual Fees and Expenses

Tuition		$1,600.00
General fee		200.00
Room rent	$480.00 (single)	360.00 (double)
Board		500.00
Books and supplies (estimated)		120.00

Additional charges will be made for such extras as election of courses in golf or digital computation, the registration of a car and damages to University property caused by the student.

Miscellaneous expenses depend upon the tastes and habits of the individual. Travel costs, clothing purchases and other major expenditures should be added to this estimate.

The inclusive fee due each semester is payable to the Bursar upon receipt of the University's statement but in every case not later than the day of registration. Information about insured tuition payment plans acceptable to the University may be obtained from the Office of the Bursar.

After the day of registration no refund of tuition, general fee or room rent will be made. If a student withdraws, a board refund is made on a *pro rata* basis.

Unpaid Bills

Until the student has settled with the Bursar for all indebtedness, her records are not released nor is she considered a candidate for graduation.

The Bursar sends bills directly to the student unless she requests in writing that they be sent to her parents or guardians.

Financial Aid, Loans, Grants and Scholarships

Loans, grants-in-aid and scholarships are available to entering freshmen and to continuing students. Entering freshmen apply through the Office of Admission (see "Student Aid" in the *Bulletin of Undergraduate Instruction*). Continuing students may apply for loans through the University Loan Committee, 102 B Allen Building, not later than July 1 preceding the academic year for which assistance is requested.

Application for grant-in-aid or renewal of a scholarship should be made to the office of Undergraduate Financial Aid, 614 W. Campus Drive. Application for scholarships administered by The Woman's College to upperclass students must be submitted to the office of the Dean of The Woman's College by March 1 prior to the year of the award.

In case of financial emergency, students are invited to consult the Dean of The Woman's College, the Dean of Women, or the Director of Undergraduate Financial Aid.

Appendices

A. Statutes of North Carolina Pertaining to the Possession and Use of Alcoholic Beverages

G.S. 18-90.1. Sale to or Purchase by Minors.
It shall be unlawful for:

(1) Any person, firm or corporation knowingly to sell or give any of the products described in G. S. 18-64 to any minors under 18 years of age.
(2) Any minor under 18 years of age to purchase or possess, or for anyone to aid or abet such minor in purchasing any of the products described in G. S. 18-64.
(3) Any person, firm or corporation knowingly to sell or give any of the products described in G. S. 18-60 to any minor under 21 years of age.
(4) Any minor under 21 years of age to purchase or possess, or for anyone to aid or abet such minor in purchasing any of the products described in G. S. 18-60.

G. S. 18-64. Definitions.

The term "beverages" as used in this article shall include:
(1) Beer, lager beer, ale, porter, and other brewed or fermented beverages containing one-half of one per cent (1%) of alcohol by

volume but not more than five per cent (5%) of alcohol by weight as authorized by the laws of the United States of America.

(2) Unfortified wines, as used in this article, shall mean wine of an alcoholic content produced only by natural fermentation or by the addition of pure cane, beet, or dextrose sugar and having an alcoholic content of not less than five per centum (5%) and not more than fourteen per centum (14%) of absolute alcohol, the per centum of alcohol to be reckoned by volume, which wine has been approved as to identity, quality and purity by the State Board of Alcoholic Control as provided in this chapter.

The term "person" used in this article shall mean any individual, firm, partnership, association, corporation, or other groups or combination acting as a unit.

The term "sale" as used in this article shall include any transfer, trade, exchange or barter in any manner or by any means whatsoever, for a consideration.

G. S. 18-6o. Definition of "Alcoholic Beverage."

The term "alcoholic beverage," as used in this article, is hereby defined to be and to mean alcoholic beverages of any and all kinds which shall contain more than fourteen per centum of alcohol by volume, and this article is not intended to apply to, or regulate, the possession, sale, manufacture or transportation of beer, wines or ales containing a lower alcoholic content than above specified, and whenever the term alcoholic beverages is used in this article, it shall be construed as defined in this section.

B. Drug Policy for Duke University

Duke University prohibits its members to possess, use, or distribute illegal drugs, including opiates, barbiturates, amphetamines, marijuana and hallucinogens, except for legally authorized medical purposes and scientific research. Both Federal and North Carolina laws forbid unauthorized possession and distribution of drugs of the classes specified. In addition, the presence and use of many of these drugs within the University community are contrary to the intellectual and educational purposes for which the University exists.

The University recognizes that ignorance or innocence concerning such drugs threatens the safety of members of its community. It therefore seeks to provide as much information as it can concerning the consequences of harmful drugs. The University recognizes also that the illicit use of drugs may reflect emotional problems and is prepared to assist its members involved in their use through medical and psychiatric counseling. Nevertheless, the University considers a violation of the drug

prohibition a serious matter and reserves the right to take action appropriate to the circumstances of each case.

Action taken by the University in all cases of drug violation will be guided by a concern both for the emotional and physical welfare of the person involved and for the maintenance of a suitable educational environment for all members of the University.

Rules

1. Alleged violations of the policy stated in paragraph 1 above will be adjudicated by the appropriate deans, or in the case of non-students, by comparable authorities, and their appointed delegates. It is expected that deans' staffs will exercise professional judgment in referring indicated cases to University health and counseling services, in keeping with paragraphs 2 and 3 of the policy stated above.

2. The two grounds which may constitute occasion for the assessment of penalties are:
   a. Conviction of a member of the University on a drug charge by a court of law.
   b. A finding by the appropriate University tribunal in conformity with the principle of due process, of sufficient evidence that a member of the University has violated the drug policy.

3. The maximum penalty to be imposed within the University upon a student for the possession or use of marijuana shall be suspension; for the possession or use of other illegal drugs, or the distribution of any illegal drug, the maximum penalty of the University is expulsion. Other members of the University shall be liable to appropriate comparable penalties.

C. Statutes of North Carolina Pertaining to the Possession and Use of Certain Drugs

Under the provisions of G. S. 90-87 (General Statutes of North Carolina) (1) d. marijuana is defined as a narcotic drug.

G. S. 90-87 (9) further defines narcotic drugs: "Narcotic drugs" means coco (coca) leaves, opium, cannabis, peyote, mescaline, psilocybe maxicana, psilocybin, lysergic acid diethylamide, or other psychedelic drugs or hallucinogens, or any derivatives of any of these which possess hallucinogenic properties, and every other substance neither chemically nor physically distinguishable from them; and other drugs to which the federal narcotic laws may now apply; and any drug found by the State Board of Health, after reasonable notice and opportunity for hearing, to have an addiction-forming or addiction-sustaining liability similar to morphine or cocaine, from the effective date of determination of such finding by said State Board of Health.

G. S. 90-88 provides that "it shall be unlawful for any person to manufacture, possess, have under his control, sell, prescribe, administer, dispense, or compound any narcotic drug except as authorized in this article." (The authorization referred to is with respect to licensed druggists, pharmacists, physicians, and others, who can legally possess and dispense narcotic drugs.)

G.S. 90-111. **Penalties for Violation.** (a) Any person violating any provision of this article or any person who conspires, aids, abets, or procures others to do such acts shall upon conviction be punished, for the first offense, by a fine of not more than one thousand dollars ($1,000.00) or be imprisoned in the penitentiary for not more than five years, or both, in the discretion of the court. For a second violation of this article, or where in case of a first conviction of violation of this article, the defendant shall previously have been convicted of a violation of any law of the United States, or of this or any other state, territory, or district, relating to the sale or use or possession of narcotic drugs or marijuana, and such violation would have been punishable in this State if the offending act had been committed in this State, the defendant shall be fined not more than two thousand dollars ($2,000.00) and be imprisoned not less than five nor more than ten years. For a third or subsequent violation of this article, or where the defendant shall previously have been convicted two or more times in the aggregate of a violation of any law of the United States, or of this or any other state, territory, or district relating to the sale, use or possession of narcotic drugs or marijuana, and such violation would have been punishable in this State, the defendant shall be fined not more than three thousand dollars ($3,000.00) and be imprisoned in the penitentiary not less than fifteen (15) years nor more than life imprisonment.

(b) Upon conviction for a second or subsequent offense the sentence provided by this section shall not be suspended and probation shall not be granted unless the presiding judge shall find that the violation for which the defendant was convicted did not consist of peddling, selling, bartering or otherwise distributing narcotics to others in violation of this article, or the possession of narcotics for the purpose of peddling, selling, bartering or otherwise distributing narcotics to others in violation of this article. For the purpose of making the finding provided in this subsection before a sentence may be suspended, the defendant shall have the burden of proving that the violation for which he was convicted did not consist of peddling, selling, bartering or otherwise distributing narcotics to others in violation of this article or the possession of narcotics for the purpose of peddling, selling, bartering or otherwise distributing narcotics to others in violation of this article. The charge contained in the warrant or bill of indictment shall not be considered in making such finding for the purpose of suspending the sentence.

(c) If the offense shall consist of the sale, barter, peddling, exchange,

dispensing or supplying of marijuana or a narcotic drug to a minor by an adult in violation of any provision of this article, such person shall upon conviction be punished by a term of not less than ten years nor more than life imprisonment and shall be fined not more than three thousand dollars ($3,000.00) for the first and all subsequent violations of this article, and the imposition or execution of sentence shall not be suspended, and probation shall not be granted.

D. Federal Statutes Pertaining to the Possession and Use of Certain Drugs

Marihuana is regulated by the Treasury Department and hallucinogenic drugs by the Bureau of Drug Abuse Control [Pure Food, Drug and Cosmetic Act] of the Department of Health, Education and Welfare. Different statutes apply to each.

(1) *Marihuana*

Title 26, *Section* 4741 imposes a tax on all transfers of marihuana of $1.00 per ounce or fraction thereof upon those who have paid a special license tax and who have complied with regulations. A tax of $100.00 per ounce or fraction thereof is imposed upon those who have not paid the special license tax and/or have not complied with the regulations.

Title 26, *Section* 4742(a)—It shall be unlawful for any person, whether or not required to pay a special tax and register under section 4751 to 4753 inclusive, to transfer marihuana, except in pursuance of a written order of the person to whom such marihuana is transferred, on a form to be issued by the Secretary or his delegate. [Except by one engaged in professional practice, by prescription, or by an officer of the U. S.]

Title 26, *Section* 4744 makes it unlawful for a person [without license and tax] to acquire or obtain marihuana and to be unable, after reasonable notice, to produce the order form for this marihuana required by Section 4742. Proof that a person has had possession of marihuana is presumptive evidence of guilt.

Title 26, *Section* 7237 (1966) fixes the following penalties for violation of Section 4742(a) and 4744:

Under Section 4744	*Fine*		*Imprisonment*
1st Conviction	Not more than $20,000.00	and/or	Not less than 2 or more than 10 yrs.
2nd Conviction	Not more than $20,000.00	and/or	Not less than 5 or more than 20 yrs.
3rd Conviction	Not more than $20,000.00	and/or	Not less than 10 or more than 40 yrs.

Under Section 4742	*Fine*		*Imprisonment*
1st Conviction	Not more than $20,000.00	and/or	Not less than 5 or more than 20 yrs.
Other Convictions	Not more than $20,000.00	and/or	Not less than 10 or more than 40 yrs.

If the offender has reached his 18th birthday at time of the offense of selling, bartering, or giving away an [illicit] drug or marihuana to one *not* 18, or conspiring to do so, the imprisonment is not less than 10 or more than 40 years and/or a fine of not more than $20,000.00.

(2) *Hallucinogenic Drugs*

Title 21, *Section* 321 (V), (1966)—The term "depressant or stimulant drug" means . . . . any substance which the Secretary [Health, Education and Welfare], after investigation, has found to have, and by regulation designated as having, a potential for abuse because of its depressant and stimulant effect on the central nervous system or its hallucinogenic effect; except the Secretary shall not designate under this paragraph . . . . marihuana as defined in Section 4761. [This section defines marihuana as marihuana and practically all of its components, from seed to dried leaf.]

Title 21, *Section* 360(a), 7(c), (1966)—No person, other than an exempt person [see next paragraph] shall possess any depressant or stimulant drug otherwise than for personal use or for a member of his household or for his animal.

[An exempt person, referred to in this section, is one in the legal business of selling, treating with, or transporting these drugs. Also, one who is using the drug in research, teaching, or chemical analysis and not for sale.]

Title 21, *Section* 360(a), 7., (1966)—No person, unless licensed or authorized and acting in the ordinary and authorized course of his business, profession, occupation or employment . . . . shall sell, deliver, or otherwise dispose of any depressant or stimulant drug to any other person.

Title 21, *Section* 333 (1966) fixes the following penalties:

	Fine		*Imprisonment*
1st Conviction	Not more than $ 1,000.00	and/or	Not more than 1 yr.
2nd Conviction	Not more than $10,000.00	and/or	Not more than 3 yrs.

Any person who has attained his 18th birthday when the offense was committed who sells or disposes of depressant or stimulant drugs to one who has not attained his 21st birthday is subject to these penalties:

	Fine		*Imprisonment*
1st Conviction	Not more than $ 5,000.00	and/or	Not more than 2 yrs.
2nd Conviction	Not more than $15,000.00	and/or	Not more than 6 yrs.

Index

Absences from Classes, 8
Academic Counseling, 15, 16, 17
Academic Honors, 10, 11
Academic Information and Procedures
  Attendance, 8
  Continuation Requirements, 9
  Declaration of Major, 9
  Graduation Requirements, 9, 10
  Make-up of Examinations, 10
Accident Insurance, 20, 21
Administration of The Woman's College
  Dean of The Woman's College, v, 15
  Dean of Women, v, 17
  Deans of Instruction, v, 15, 16, 17
  House Counselors, v, 17, 18
  Resident Associates, v
Administrative Offices of the University, 22
Alcoholic Beverages, 27, 30, 38, 39
Appointments Office, 22
Associated Students of Duke University, 2
Attendance, 8
Audit, 5
Authorization of the Release of Data, 14
Awards, 10, 11

Board, 25, 37
Books and Supplies, 37

Care of Rooms and Furnishings, 24, 25
Cars (see Motor Vehicles)
Change in Major, 9
Change in Status
  From Resident to Non-resident, 13
  From Non-resident to Resident, 13
  From Full-time to Part-time, 13
  From Part-time to Full-time, 13
  From Non-degree to Degree Candidate, 13
  Leave of Absence, 13, 14
Changes in Registration after Classes Begin, 6, 7
Chaplain of the University, 18
Class Honors, 10
Class Scholars, 10
College Regulations
  Community Regulations, 29, 30
  Dormitory Regulations, 31, 32, 33, 34
  Formulation and Modification, 27
  General College Regulations, 34, 35
  Judicial Structure, Procedures, and Penalties, 27, 28, 29
  Philosophy, 26, 27
Commencement Week, 35
Community Regulations
  Campus Trespass, 30
  Integrity, 29
  Nondiscrimination and Off-Campus Facilities, 29, 30
  Pickets and Protests, 30
  Possession and Use of Alcoholic Beverages, 30
  Possession and Use of Certain Drugs, 30
  Social Disturbance, 30
Conferences, Conventions, etc., 34, 35
Continuation Requirements, 9
Counseling
  Academic, 15, 16, 17
  Career, 22
  Employment, 17, 22
  Faculty Associates, 18
  Freshman Advisory Council, 18
  Health, 19, 20, 21
  House Counselors, v, 17, 18

Mental Health, 19, 20, 21
Religious, 18
Residential, 17, 18
University Counseling Center, 22
Course Audit, 5
Course Changes, 6, 7
Course Load and Eligibility for Courses, 5
Curfew, 31

Dean's List, 10
Declaration and Change of Major, 9
Discipline Committee, 28, 29
Distinctions, 10
Dormitories, 2, 23, 24, 25, 31, 32, 33, 34
Dormitory Regulations
Absence, 32
Extension of Curfew, 31
Guests, 33
Hours for Dormitory Residents, 31
Hours for Men Vistors, 32
Late Arrivals, 33
Meetings in the Dormitory, 34
Open Houses, 33
Quiet, 31
September Arrival, 31
Signing In-and-Out, 32
Special Leave from Campus, 32, 33
Use of Dormitory Rooms during Vacations, 34
Visiting Men's Residences, 32
Drugs, 19, 20, 30, 39, 40, 41, 42, 43
Emergency Service (health), 21
Employment, 17, 22
Excused Absences, 8

Faculty Advising, 4, 17
Faculty Associates, 18
Federal Statues Pertaining to the Possession and Use of Certain Drugs, 42, 43
Financial Aid, Loans, Grants, and Scholarships, 37
Financial Information
Annual Fees and Expenses, 37
Financial Aid, 37
Late Registration Fee, 5
Registartion Fee and Deposits, 5, 36
Tuition and General Fee, 37
Unpaid Bills, 37
Food Services, 25
Freshman Advisory Council, 18

General College Regulations
Commencement Week, 35
Conferences, Conventions, etc., 34, 35
Marriages, 34
Motor Vehicles, 34
Social Functions, Registration of, 34
General Fee, 37
General Information, 1, 2, 3
Grading
Grades and Quality Points, 6
Issuance of Grades, 8
Pass-Fail Option, 5
Graduation Honors, 10
Graduation Requirements, 9, 10
Graduation with Distinction, 10
Grants-in-Aid, 37
Guests (overnight in dormitories), 33

Health and Accident Insurance, 20, 21
Health Services, 19, 20, 21
Honor System, 26, 27
Honorary Societies, 10
Honors, 10
Hospitalization, 19, 20, 21
Hours for Dormitory Residents, 31
Hours for Men Visitors, 32
House Counselors, v, 17, 18

Identification Cards, 6, 27
Incompletes, 10
Integrity (see also Honor System), 29
Inter-Institutional Agreement (see Reciprocal Agreement)

Judicial Board, 27, 28, 29
Judicial Structure, Procedures, and Penalties, 27, 28, 29

Leave of Absence, 13, 14
Living Accommodations
Food Services, 25,
Residence, 12, 23, 24, 25, 31, 32, 33, 34, 35
Living-Learning Corridors, 2, 23, 24
Loans, 37
Make-up Examinations, 10
Marriages, 13, 34
Mental Health Clinic, 20, 21
Motor Vehicles, 27, 34

Open Houses, 33

Pass-Fail Option, 5
Pickets and Protests, 27, 30

Plagiarism, 27, 29
Pre-registration, 4, 5
Pre-registration Deposit, 5, 36
Prizes, 10
Publications, Distribution of
Academic Guide for Freshmen, 3
Bulletin of Undergraduate Instruction, 3
Freshman Week Program, 3
The Use and Acknowledgments of Sources, 3
Woman's College Handbook, 3

Readmission, 14
Reciprocal Agreement with the University of North Carolina, 12
Registration, 4, 5, 6, 7
Registration Fee and Deposits, 5, 36
Regulations (see College Regulations) 29
Release of Student Records, 14
Religious Life Staff
The Associate Director of Religious Life, 18
The Chaplain of the University, 18
Residence, 2, 23, 24, 25, 31, 32, 33, 34
Residential Counseling, 17, 18
Room Deposit, 36
Room Key Deposit, 24
Room Rent, 37

Scholarships
Alice M. Baldwin Scholarships, 10
Delta Delta Delta Scholarship, 11
Evelyn Barnes Memorial Scholarship, 11
Panhellenic-Sandals Scholarship, 11
Signing In-and-Out, 27, 32
Social Disturbance, 27, 30
Social Functions, Registration of, 34
Special Leave from Campus, 27, 32, 33
Statutes of North Carolina
Pertaining to Alcoholic Beverages, 38, 39
Pertaining to Certain Drugs, 40, 41, 42
Storage, 24
Student Aid, 37
Student Government
Associated Students of Duke University, 2
Judicial Structure, 27, 28, 29
Woman's Student Government Association, 2, 26
Student Health, 19, 20, 21
Study Abroad, 12
Study Elsewhere, 11, 12
Summer School Elsewhere, 11, 12

Transfer of Credit, 11
Transfer within Duke University, 12, 13
Trespass, 30
Tuition, 37

Unpaid Bills, 37

Vacations (Use of Dormitory Rooms), 34

Withdrawal, 14
Woman's Student Government Association, 2, 26

1968

JULY

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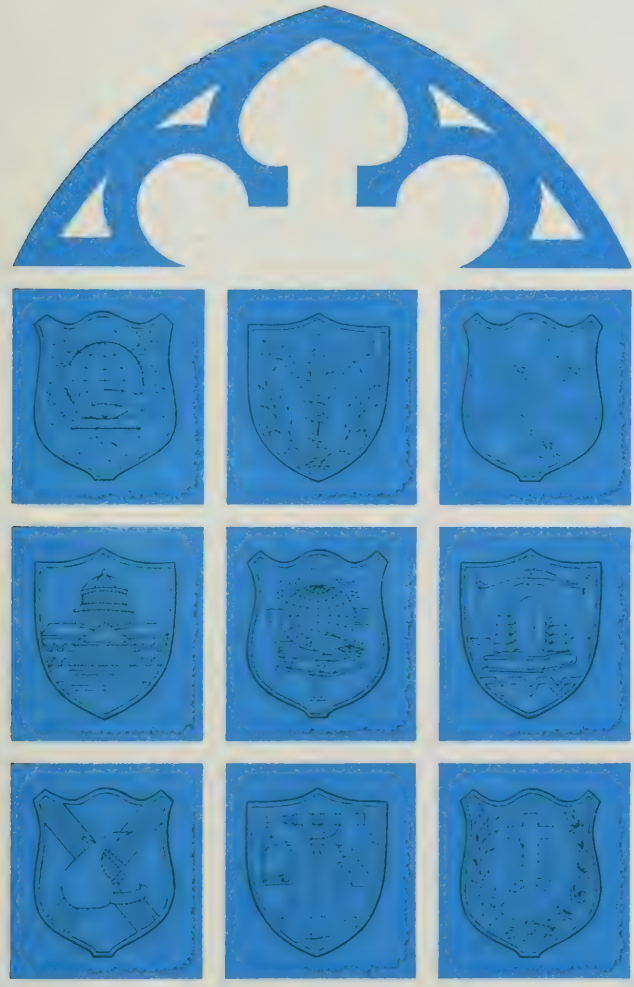
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BULLETIN OF DUKE UNIVERSITY

Information for Prospective Students



Annual Bulletins

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Cover: Shields representing the various disciplines embraced by the liberal arts are carved above entrances to academic buildings of the University.

Information for Prospective Students

June 1968

BULLETIN OF DUKE UNIVERSITY

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Contents

Academic Life 1
- Curriculum for Arts and Sciences 2
- Curriculum for Engineering 9
- Curriculum for Nursing 9
- Military Science 11
- Special Opportunities 13

The University 16
- Location 17
- Faculty 17
- Students 18
- Libraries and Laboratories 18

Student Life 21
- Residence 23
- Religious Life 25
- Arts 26
- Intercollegiate Athletics 29
- Physical Activities 29
- Student Services 31
- Student Union 33
- Publications 33

Admission 34
- Early Decision 35
- Transfer 36

College Expenses 37
- Estimated Costs 37
- Financial Aid 39

General Information 41

Courses 43

ACADEMIC LIFE

The prime goal of the American liberal arts college has been the development of the full person, intellectually, emotionally, and socially. The student entering Duke is challenged to acquire an open mind; the ability to think and speak with discrimination and control; a responsiveness to beauty, whether the beauty of a carbon atom or a Beethoven symphony; an appreciation for values, intellectual, moral, and aesthetic; and sensitivity to environment, to needs of society, and to feelings and opinions of others. During the undergraduate years the student learns to approach problems in an orderly and rational fashion; to pursue studies with thoroughness, vigor, and inquisitiveness; to express ideas with clarity, whether written or oral, and with courage of conviction, or with an admission of doubt where conviction is absent.

The faculty believes that education should be seen by a student as a stance toward life: open-minded, flexible, versatile, appreciative, rational, and well-intentioned. A student is most likely to develop such a stance in an atmosphere of freedom: where he shares responsibility for his own education and his own decisions; where he can be concerned not only with what he learns but how he learns; and where he can develop skills that will allow him to continue his education on his own. A student cannot get all his education in four years, nor can he encounter meaningfully nearly all the subjects that the University offers. Nevertheless, he should develop breadth and perspective in his knowledge and a specialized ability in one or two fields. More important, however, he should develop a desire to continue learning on his own. If he does, he can leave well pleased; if he does not, he has wasted his time.

Curriculum for Arts and Sciences

A curriculum is a course of study; it is the means by which a faculty effects what in an education it deems important. The curriculum at Duke takes into account the diversity of the student body and the changing environment into which students will emerge upon graduation. Duke seeks to prepare these graduates to deal with this world by developing in them the skills to adjust to it, the understanding to make sense of it, and the values to improve it. The curriculum recognizes that students come with widely varying interests and abilities and with differing goals: some hoping to become scientists, others aspiring artists or writers, others professional men, some wishing to be good mothers or good citizens. Students hope for an education to be more than simply a collection of courses in various subject-matters. As important as the subject-matter a student learns is how he learns, and Duke offers a variety of learning experiences in two programs that lead toward a degree.

Program I

Under Program I a student has some study in each of the three main divisions: natural sciences and mathematics, humanities, and social sciences. In one division he will have a major; in a second he will carry on some study at an advanced level so that he gets beyond the introductory concepts and facts; in the third he will have enough courses to assure his exposure to the fundamentals and modes of thinking of this division. The curriculum rests firmly on the notion that students mature by making choices, even wrong ones, and that they should have latitude with good faculty advisers to choose the courses that seem most appropriate for their own talents and goals. Within these divisions, no specific courses are required of all students.

At the same time, certain skills seem appropriate for students in Program I. They should demonstrate a high level of ability in writing good English and should be competent in at least one foreign language. Some students will have these abilities on their arrival at the University, and can, by passing proficiency tests, be exempt from courses at this level in these areas. Other students will take a one-semester course in English composition and one or two years of a foreign language. No student, however, is simply required to take these courses without having an opportunity to demonstrate his ability in them, and all students are urged to develop adequate proficiency in English and a foreign language in high school.

In Program I Duke offers the student an intense encounter with acquiring knowledge in various Learning Experiences. One kind of learn-

ing takes place in a lecture, another kind in a seminar or tutorial, both having their place in the University and in the experience of a student. Each student is required throughout his time at the University to have a specified number of seminars, preceptorials, tutorials, or discussion sections in which he comes in close contact with a faculty member so that he may gain from the maturity and wisdom of his teachers and observe at first hand how experienced minds approach problems. At a time in which students all over the country are asking for the opportunity for dialogue with their teachers, the faculty of Duke has said that every student must have a substantial amount of study in a small group in which he can have his ideas directly criticized by his peers and his professors, can contribute directly to the education of his fellow students, and can develop responsibility as he takes a position and defends his views.

A seminar is an independent course of small enrollment; a tutorial is a meeting between an instructor and several students which might be an independent course, or might be attached to another course; a preceptorial is a discussion group led by an instructor and consisting of students who wish to do additional study beyond that required for the regular course to which the preceptorial is attached; a discussion section is an integral part of a regular course that includes a large lecture. In these groups of up to 15 students, the individual may engage in discussion, develop skills, refine judgment, and have ideas challenged.

With Duke's curriculum the student may look less to the time that he spends in class listening to professors and more to himself and what he brings to class as the basis for his education. The opportunities for independent study afforded to all students by this curriculum exceed those available even to honor students at many universities. At a time when students in other universities are complaining of being no more than computer numbers, Duke University has guaranteed that no student can idly pass through the University on the back row, an anonymous and shady figure appearing only in a grade book.

Program I, therefore, has the following requirements:

I. The normal academic load of a student is four courses per semester; 32 semester-courses are required for graduation.

II. Distributional Requirements: Subject-Matter.
A student must pass courses in each of three divisions: social sciences, natural sciences and mathematics, and humanities.
   A. A student will pass the number of courses in the division of his concentration required by the department in which he concentrates.
   B. A student will pass at least four semester-courses in a second division, at least two of these at the advanced level.
   C. A student will pass at least two semester-courses in a third division.

III. Skill in English Composition.
All students are required either to demonstrate their ability to



The rare book room in Perkins Library

write good English or to pass a one-semester course in English composition, which they should take in their first semester.

IV. Skill in Foreign Language.

All students are required to demonstrate or to attain proficiency in foreign language equivalent to that achieved by completing the second college year of that language. Students are urged to develop this proficiency before arriving at the University.

V. Learning Experience.

The student is required to have the following varieties of learning experience:

A. Freshman year.

1. A seminar in one semester,

or

2. Two preceptorials, discussion sections, or tutorials during this year.

B. Sophomore year.

The same requirements as in the freshman year.

C. Junior and Senior years.

1. A combination of seminars or independent study with credit equal to at least two courses,

or

2. A thesis or an independent project at some time during the student's junior or senior years for which he would receive credit for two courses.

VI. Concentration.

A. Major.

A major consists of five to ten courses in one department above the introductory level. More intensive major programs may be offered for the student's election;

or

B. Interdepartmental Concentration.

Interdepartmental concentration consists of at least three courses beyond the introductory level in each of two or more departments, and requires the approval of the Directors of Undergraduate Studies in the departments concerned.

Program II

The student of unusual interests or talents has the opportunity in Program II to plan his own curriculum, with the assistance and approval of the faculty in his area of concentration, *free of all requirements specified under Program I.* In most instances, a student will apply for entry to Program II to a particular department in which he wishes to major. Occasionally he will plan an interdepartmental program that will require the approval of several departments, though the student's principal adviser remains within one department. In Program II, the student with

departmental assistance plans his studies specifically for his abilities.

The departments, with a large degree of autonomy, set their own criteria for acceptance into Program II. While students in Program II need 32 courses passed for graduation, they may easily spend, for example, a full year in independent study for which they might receive credit for eight courses. Or they might study government in Washington, D. C., or engage in a special program requiring time to be spent off-campus. Or they might plan to spend some time in foreign residence even if their major field is not foreign language. A student in Program II might combine a major in physics with a number of courses in creative writing if she were interested in writing for popular scientific journals. Still another student might wish to go into city planning after graduation, and might be well advised to concentrate heavily in sociology, political science, and economics, with perhaps some study of art and architecture in addition. In Program II the student and his adviser have the opportunity to evaluate the courses and opportunities for independent work open to the student, and to allow the student the possibility of shaping his own educational future.

Permission to enter Program II may be granted after formal admission to the University. Students wishing to begin in their freshman year must submit to the appropriate department an essay delineating why they wish to enter Program II. A student may transfer into Program II at any time that the department and supervisory committee approve; once transferring, he assumes the obligations of Program II and drops the requirements of Program I. Conversely, a student leaving Program II for any reason whatever assumes the responsibilities of Program I.

Advising

Students who have not declared their majors are assigned to a faculty adviser to help them plan courses of study that take account of their abilities, needs, and aspirations. Students who have declared their majors (which they normally do before their junior years) are advised by departmental faculty, to whom they are assigned when they declare their majors. In addition, qualified graduate students who serve as housemasters assist in offering academic and social advising. Students may be further assisted by departmental Directors of Undergraduate Studies, Supervisors of Freshman Instruction, and the Academic Deans of the colleges.

The deans of Trinity College choose certain members of the faculty to serve in the capacities of an advisory board to the administration and as mentors to the West Campus residents. Each Faculty Fellow is assigned to a freshman or independent house where he advises the housemaster and house officers. Together with the officers, the Fellow works with planning educational and social events for the house. The Faculty Associates serve the women of East Campus residences in much the same way as the Fellows serve Trinity College.

Majors

Majors leading to the degrees of Bachelor of Arts and Bachelor of Science are offered in the following areas: accounting, anthropology, art, botany, business administration, chemistry, economics, elementary education, English, French, geology, German, Greek, health and physical education (women only), history, Latin, mathematics, music, music education, philosophy, physics, political science, psychology, religion, Russian, science education, sociology, Spanish, zoology. Departments set their own requirements for majors in their disciplines, but no department can require more than eight semester-courses at an advanced level for a student seeking the B.A. degree, nor more than ten for one seeking the B.S. degree.



Seminars provide the grounds for scholarly debate.



Students in the School of Engineering work with modern technological devices in solving problems

Curriculum for Engineering

The School of Engineering offers a four-year program leading to the Bachelor of Science Degree. Students may major in civil, electrical, or mechanical engineering; they may also elect interdisciplinary fields such as biomedical engineering, energy conversion, systems and controls, engineering mechanics, and others.

	Semester Hours
English: satisfied by completion of the freshman course	6
Mathematics: Introductory Calculus, Intermediate Calculus, Introduction to Digital Computation, and Applied Mathematical Analysis I	15
Natural Science: General Inorganic Chemistry and General Physics	16
Social Science and History: prescribed course work chosen from freshman or sophomore anthropology, economics, history, political science, psychology, or sociology	6
Humanities: 6 s.h. in one of the following: Representative British or American Writers; Greek or Latin Literature in Translation; Knowledge, Fact, or Value; History of Philosophy; Introduction to Art History; Introduction to Music Literature; The English Bible or other prescribed religion courses; and foreign language courses above the sophomore level not in English translation	6
Electives in Social Science, History, and Humanities: a minimum of 6 s.h. in addition to the above	6
Physical Education: Completion of freshman and sophomore courses	4
Departmental or major specifications: met by completion of course work specified by the student's major department: a minimum of 16 s.h. in engineering courses of which 6 s.h. are in design-oriented studies	43
Engineering Core Course: normal 32 s.h. in engineering fundamentals, to total	134

Curriculum for Nursing

The requirements for the degree of Bachelor of Science in Nursing are designed to: 1) prepare persons for positions in professional nursing and to provide the foundation for graduate education; 2) to offer a wide choice in selection of educational experiences which enable students to work towards their own particular goals; and 3) to unify general and specialized education to the end that individuals may effectively assume their responsibilities as persons, citizens, and professional practitioners. The curriculum is planned to cover a period of four academic years; and

upon its completion, graduates are eligible to apply for licensure as a Registered Nurse in any state.

The freshman and sophomore years are primarily devoted to the study of liberal arts and basic sciences. The focus of the junior and senior years is the nursing major.

Fifteen courses are taken per semester in the first two years. The students select the courses with guidance from their academic advisers. The following standard course requirements are included and listed as lower division course work:

Natural Science	2
English	1
Humanities	1
Social Science: sociology or anthropology and psychology	3
Basic Statistics	1
Concepts of natural sciences fundamental to normal functioning of man	2

The remaining 19 to 31 semester hours of course work will be selected by the students, with assistance from their academic advisers, from other courses in the natural sciences, the social sciences and the humanities.



Nursing students in lively discussion

Military Science

Through Naval and Air Force Reserve Officers Training Corps programs the University is cooperating with the Department of Defense in providing officers for the active and reserve forces of the nation.

Naval ROTC

There are two basic programs in the Naval ROTC through which students can qualify for Naval commissions upon graduation: one, the Regular NROTC program, provides a maximum of four years in the University largely at government expense, followed by a commission in the regular Navy or Marine Corps; the other, the Contract program, leads to a commission in the Naval Reserve or the U.S. Marine Corps Reserve.

The Regular Student. Appointments are made on the basis of an annual nationwide test and selection procedure. Students selected are appointed Midshipmen, USNR, and receive four years tuition, fees, and textbooks at government expense plus subsistence and summer active duty pay which amounts to approximately $750 per year. The regular midshipman may take any course leading to baccalaureate or higher degree with certain exceptions, e.g., pre-medicine and medicine, pre-theological and theological, music and art. He participates in two summer training cruises aboard ship and receives aviation and amphibious indoctrination at naval shore stations during one summer. Upon graduation he receives a commission as Ensign in the Regular Navy, or Second Lieutenant in the Regular Marine Corps. The minimum period of active commissioned service is four years for regular officers.

The Contract Student. The contract student is selected from freshmen regularly enrolled in Duke University who desire to qualify for a commission in the Naval or Marine Corps Reserve while pursuing their normal courses of study. He has the status of a civilian who has entered into a mutual contract with the Navy and is not eligible for the benefits and retainer pay received by regular midshipmen. He is paid a subsistence allowance during his last two years in the NROTC, however, amounting currently to fifty dollars a month. He goes aboard ship for one summer training cruise, normally between his junior and senior years. Upon graduation, he is commissioned in the Naval or Marine Corps Reserve and reports for active duty. Minimum period of service for both the Navy and the Marine Corps is three years.

Both Regular and Contract midshipmen are deferred from Selective Service by virtue of their commitment to serve on active duty after graduation. The Navy furnishes necessary uniforms and equipment.

Air Force ROTC

The unit functions as a regular department of instruction known as the Department of Aerospace Studies. It selects and trains students who possess the requisite character, intelligence, desire, and sense of duty to become Air Force officers.

For enrollment in the Basic Course (freshman and sophomore years) the student must be a male citizen of the United States; be physically qualified under standards prescribed by the Air Force; be accepted by the institution as a regularly enrolled student and must meet other stated requirements.

For enrollment in the Advanced Course the student must have successfully completed either the Basic Course or the six weeks Field Training Course, or have had at least one year of honorable service in the Armed Forces of the United States; must execute a written agreement with the government to complete the Advanced Course; must be sworn into the Enlisted Reserve; and must agree to accept a commission in the United States Air Force Reserve upon graduation.

Those selected for the advanced course are furnished uniforms, texts, training equipment and are paid approximately $900 for the two years of the Advanced Course. Each advanced student will attend a summer training unit, at Government expense, normally between his junior and senior year.

One of many outdoor student forums



Special Opportunities

Basically, Duke believes that all its students are potentially honor students. It accepts applicants with high intellectual capacity and places large responsibility on them for their academic success. In addition to the seminars, tutorials, preceptorials, and discussion sections taken by all students working for B.A. and B.S. degrees, special opportunities exist.

Several departments offer special freshman sections in their introductory courses for students presenting superior credentials on admission: such sections are offered in English (creative writing), history, philosophy, political science, religion, and sociology.

Students who have achieved high ability in an area without having had formal college course work are often given the choice to take an Advanced Placement Examination of the College Entrance Examination Board or placement tests given by the colleges during orientation week in order to place out of courses. In order to bypass introductory courses, students may complete a summer reading list and, upon return in the fall, take a three-hour examination to qualify for advanced work.

Distinguished professor seminars are offered to upperclassmen. These interdisciplinary seminars of limited enrollment are conducted by senior faculty members, usually holders of named chairs. Thus, the most distinguished faculty in the University are available to undergraduates.

Independent Study

Under the new curriculum, any student in the University can, with the approval of his instructor and adviser, engage in independent study. The limits of such study are determined by the student, his adviser, and the instructor concerned. Duke believes that since almost all study after leaving the University is likely to be independent study, students should gain habits of independent research as soon as possible. Such study allows a student to deepen his penetration into his regular course work or into an area outside a formal offering; to undertake work of greater magnitude than ordinarily is possible in regular courses; or to bridge several disciplines in a manner relevant to the student's interests.

Graduation with Distinction

Students with distinguished ability within a particular field of concentration may enter Graduation with Distinction programs at the beginning of their junior or senior years. Usually such programs involve participation in a special seminar, directed reading, laboratory research, or other independent study, the results of which are embodied in a distinguished piece of writing.

Pre-Professional Programs

Duke offers programs for those intending to teach in elementary school and high school, with special majors for those intending to teach science or music. A student may specialize in public or industrial accounting to qualify for the Certified Public Accountants examination. Duke offers assistance in preparing programs that will help students in gaining admission to graduate and professional school; the majority of Duke's graduates proceed to such further study. While students are discouraged from looking upon their undergraduate years simply as time spent gaining credentials for further study, Duke offers special advising to students seeking admission to medical and dental schools, law schools, theological schools, and graduate schools. It does not, however, recommend single standardized programs for students intending to proceed in such areas of further study. Instead, faculty advisers assist students in acquiring a background appropriate for further study and in planning a curriculum that takes account of each student's special abilities and interests.

Special professional combination courses are offered to rising seniors in Trinity College and The Woman's College who wish to enter a professional school of the University. Students may, following their junior years, enter the School of Forestry or the School of Law to earn the degrees of Bachelor of Arts or Science in combination with the Master of Forestry or Bachelor of Law degree. Such plans, however, depend upon the student's admission to the desired professional school; a student so admitted registers as an undergraduate senior and as a first-year professional school student. Details on these programs are available from the School of Forestry and the School of Law.

Study Abroad

Although the University sponsors no Junior Year Abroad program, Duke students wishing a year of college study in a foreign country may do so. Students contemplating such a program should obtain permission to study abroad from their academic dean and major adviser and obtain certification in the foreign language department concerned. A leave of absence from the University is arranged for students who qualify.

Graduate Level Programs

A broad range of special programs is available to graduate students in addition to the regular departmental offerings. Most of these are interdisciplinary in nature and attempt to bring together the strengths of various departments for concentration on special fields of research.

One of the largest of these ventures, the Commonwealth Studies Center, was established at Duke in 1955 with financial support from

various Foundations. The Center awards fellowships to Commonwealth and American students and faculty to stimulate research in Commonwealth fields. Another very active program is Comparative Studies on Southern Asia which sponsors a South Asian Language Training and Area Center and provides training for graduate students in economics, history, political science, and sociology-anthropology with special emphasis on the area.

The Cooperative Program in the Humanities, jointly managed by Duke University and the University of North Carolina, aims at expanding and improving activities in the humanities in the two universities and throughout the region. Other important programs are the Populations Studies Program, the Center for Southern Studies, the Hispanic Studies Program, the Biomedical Engineering Program, and the Oak Ridge Institute of Nuclear Studies.



Provocative lecture classes provide one of several learning opportunities

THE UNIVERSITY

Although Duke University as a corporate entity dates from 1924, its roots go back nearly a century and a quarter to the Union Institute, founded in 1838 in Randolph County. "Dedicated to the erasing of ignorance and error and to the education of responsible citizens," the Institute grew slowly for a decade. In 1859 it was formally organized as Trinity College, which laid solid foundations for the future. When the college moved to the growing city of Durham in 1892, it was able to find increased support both from the church and from individuals who were dedicated to the aims of liberal education. During the next three decades Trinity College drew to its faculty men of imagination, courage, and intellectual achievement who, in an atmosphere of academic freedom, created a notable liberal arts college.

The transition from college to university dates from James B. Duke's Indenture of Trust in 1924, through which Duke University came into being. The core of the new University was Trinity College, the men's college of arts and sciences, which was joined by three other undergraduate colleges, The Woman's College in 1925, the School of Engineering in 1939, and the School of Nursing in 1953. In the meantime, a number of professional schools were established as part of the total University structure. In hardly more than a generation Duke University attained a position of educational leadership and importance, both regionally and nationally, one of the remarkable stories in American higher education.

The undergraduate colleges exist as important parts of the University which, by modern standards, is moderate in size: they enroll about 4600 students in the total population of about 7800. Though they share the same campuses with the professional schools and many of the same facilities, and participate in the wide range of activities and educational advantages possible in a university environment, each of the colleges has its separate identity; yet each is related to the others and to the University as a whole.

Location

Duke University is located in Durham, North Carolina, a city of some 80,000 citizens. The campus is a rolling, wooded tract of 8,000 acres which extends from the southwest fringe of Durham into the city proper.

Durham is part of the Research Triangle of central North Carolina. This triangle area, drawing on the resources of several major universities in the communities of Durham, Raleigh, and Chapel Hill has experienced great growth in industry and education in the past few years. With this expansion has come a rapid enrichment of cultural opportunities. The North Carolina Museum of Art at Raleigh boasts a fine collection and continues to increase its holdings every year. Musical interest in the Research Triangle is high; the Duke Chamber Arts Series, the North Carolina Symphony, and the Friends of the College Series, to name only a few, draw concertgoers from the entire area. There are several local theatre groups, and touring troupes appear frequently. Also available is an abundance of foreign films, exhibits, lectures, and symposia. Although Durham is a relatively small city, the area in which it is located is alive, stimulating, and progressive.

Duke is easily accessible from any part of the United States. Durham is situated 250 miles southeast of Washington, D.C., 500 miles south of New York, and 400 miles northeast of Atlanta. There is convenient bus and air service into Durham-Raleigh terminals as well as train service into Raleigh.

Faculty

An undergraduate student at Duke University is part of a highly exciting intellectual community. The teaching staff of the University includes some of the world's most distinguished scholars. Their interest in original investigation and their contribution to the ever-developing body of knowledge help to bring to life the materials which they teach and to communicate to the college student both the excitement and the significance of learning.

Duke's undergraduate students benefit in many ways from the presence of the University's graduate and professional schools; the quality of the facilities for research as well as the actual faculty could not be maintained without the existence of the graduate programs.

The undergraduate student at Duke has an opportunity to come in contact with many eminent scholar-teachers. Because almost all of the members of the graduate faculties teach undergraduate courses, the student may find that even his introductory courses are taught by experts in the field. All ranks in the instructional staff teach beginning as well as advanced students.

Students

In establishing his educational trust in 1924, Mr. Duke requested that "great care and discrimination be exercised in admitting as students only those whose previous record shows a character, determination, and application evincing a wholesome and real ambition for life." Within the spirit of this request the admissions officers seek those students whose records and aptitudes promise a successful college experience and "who evince a wholesome and real ambition for life." Although its physical setting is in the Southeast, over half of the student body comes from other sections of the nation and from foreign countries—there are representatives from each of the fifty states and from sixty-five foreign countries.

The University actively seeks to enroll students from a variety of different backgrounds and experiences, students possessing some special talent evolving from a passion for learning, and students who are concerned with and about the issues of today and tomorrow. Such a broadly representative group of students, chosen on merit through a selective process, ensures a cross-section of social, economic, and religious background which provides a stimulating variety in attitudes and a consequent cosmopolitan atmosphere. While high scholarship always remains an important criterion in the selection of students, it is in no instance the sole measure of a student's potential success in the colleges.

Libraries and Laboratories

Certainly the library is the indispensable core of an educational institution. From the beginning, Duke recognized the need for a fine library and its present holdings are significant both in size and quality. The University library now ranks among the first eighteen university libraries in the country, with collections totaling 1,900,000 books and over 4,000,000 manuscripts. In Perkins, the main library, in The Woman's College library, and in individual departmental libraries, there are facilities for research, reference, and relaxed reading. Through a reciprocal agreement, the libraries of the University of North Carolina and of North Carolina State University are also open to Duke students, thus adding additional educational opportunities.

Besides the library, the laboratories at Duke provide excellent facilities for student and faculty research. The University has excellent laboratory equipment: a Van de Graaff accelerator for work in nuclear physics, a phytotron, modern sensitive testing devices for certain phases of engineering, equipment for building new research apparatus on the frontiers of electronic experiment, digital computers for complicated mathematical

formulae, microphotographic apparatus for study in cell growth and decay, and modern language laboratories. All of these make their contribution to the complete education of the college student in this highly technical modern world.



The language laboratory, an integral part of language instruction



Homecoming

STUDENT LIFE

Part of a college education consists of common academic requirements and experiences, yet it is fair to say that much of it grows out of extra-academic affiliations. Certainly the diversity of backgrounds of the students in each class, in each living unit, and in each classroom fosters new knowledge and new experiences.

The campuses for men and women are geographically separated, yet social life and college life at Duke are essentially co-educational. Each campus has its own student government association, its own inter-social councils, its own local and individual groups, and the two campuses combine in the Associated Students of Duke University. These organizations meet at many points for inter-college life. Women and men jointly serve on boards and councils that are concerned with the social side of college life as well as with the academic.

Fraternities and sororities offer to some 50 per cent of the students social affiliation during the years of college. National fraternities occupy sections in the West Campus quadrangles that include chapter and meeting rooms. No separate dining facilities are provided for fraternities; the members board in the University dining halls. Both fraternity and non-fraternity groups contain respected and prominent members of the student body. Deferred rushing has been in effect for some years, and freshmen may not be asked to join fraternity groups until the beginning of the second semester of their first year. Rules governing the conduct of fraternity affairs are made by the Inter-fraternity Council and administered by the Judicial Board of that body.



A newer West Campus dorm blends Gothic and contemporary architecture

In The Woman's College national sororities have established chapters on campus. Sorority affairs are under the supervision of the Woman's Panhellenic Council, which serves these organizations much as the Men's Inter-fraternity Council serves the fraternities. On East Campus, the students eat in two dining halls.

In addition to the fraternities and sororities, various national honorary societies have chapters on the campus. These include groups in education, engineering, law, medicine, leadership, scholarship, and others.

Residence

On the East Campus eleven residence houses accommodate a student-body of about 1,250 women. Each has a standard organization, consisting of a Counselor, who is a member of the Dean's staff and who lives in the house as an adult adviser, and the student House Government committee. The latter accepts responsibility in helping provide an agreeable climate for successful dormitory life. To each house are assigned students from all four classes, about 30 places in each being reserved for freshman women.

On the West Campus some 2,400 men are housed in Quadrangles —Craven, Crowell, Few, and Kilgo—and in Wannamaker Hall. Freshmen are housed in freshman houses or in special houses with upperclassmen. In the freshman houses there are housemasters; in each cross-section and special living group there is a resident fellow.

Living-Learning Opportunities

Through faculty advisers or resident Faculty Fellows, the men's living groups conduct information seminars and similar activities to promote the integration of intellectual interests and residence hall living.

Women may take advantage of specially designated living-learning corridors where small groups of students sharing intellectual interests live together. In the French, German, and Spanish Corridors, qualified upperclassmen speak only the language of their group, and, through informal discussions and seminars, share their interests in the country's literature, culture, and customs. A native of the country serves each group as a resident Faculty Associate. Other living-learning corridors include Social Science, Contemporary Arts, African Studies, the Society of the '70's, and Science.



The interior of the Duke Chapel

Religious Life

Eruditio et Religio, the motto emblazoned on the seal of the University, proclaims belief in the essential union of knowledge and religion in the educational process. The Gothic Chapel stands as an inspiring symbol of the place of religion in the well-balanced life. Although the University is historically related to the Methodist Church, it encourages students of all faiths to develop their spiritual lives in accordance with the tenets of their own creeds.

In the University Service of Worship on Sunday morning two hundred students participate by singing in the choir; at least one hundred other students aid in special ways, as ushers, collectors, and assistants in the communion services.

Opportunities are provided through the Chapel and its related activities to translate worship into effective Christian living. Emphasis is on denominational, interdenominational, and interfaith loyalties. Protestant, Roman Catholic, and Jewish students are organized in their respective groups, each having a denominational chaplain or adviser and several having demoninational centers.

The University Religious Council, composed of students and faculty, promotes the interdenominational religious life in its many facets. The work of the Council and of the denominational program is under the supervision of the Chaplain to the University, who is also Director of Religious Life. Working with two Associate Directors of Religious Life and five denominational chaplains, he coordinates the religious program of the campus. Together, they also offer personal guidance and spiritual counsel to all students in matters related to their faith.

The Dean of the Chapel is a key figure in student religious life. A regular preacher to the University, he preaches in the Chapel each month. He serves as an officiating minister and participates in the planning of the University's religious program.

Additional opportunities for the enrichment of the student's religious life are offered in organ and carillon recitals, choral concerts, other special services held from time to time, and in the sermons of distinguished guest preachers from many lands who are heard in the Duke Chapel. Some students, at their own discretion, participate actively in the programs of the downtown churches of their choice.

The YWCA and YMCA are concerned with social work in the community and varied programs integrated with campus needs. They help new students during orientation, arrange Parents' Week-Ends, sponsor vesper services and meditations, and organize panel discussions on topics of contemporary significance.

Arts

Opportunities for students interested in music are varied. Competent musicians can find artistic groups which they may join: the symphony orchestra, the chamber orchestra, the concert band, the brass ensemble, the marching band for men. All of these organizations are professionally directed, and most are devoted to the study and performance of serious music. Those who enjoy singing, will find numerous groups available to them. The Chapel Choir, composed of two hundred men and women, and the Woman's and the Men's Glee Clubs regularly give several concerts a year. A smaller group of trained voices, the Madrigal Singers, emphasizes research for and performance of unusual ensemble music; they perform English and Italian madrigals, French chansons, and contemporary compositions *a cappella* in campus and city programs. A new group, The Chancel Singers, has been organized for a select group of sixty men and women for the performance of challenging music including Bach, Brahms, Pergolesi, Gabrielli, and Franck. The varied musical programs offered by such community groups are supplemented by the Chamber Arts Society, which brings to the campus the best chamber music ensembles from this country and abroad; by the Duke Artists' Series, which sponsors the appearance of symphony orchestras, chorale groups, individual artists, ballets; and by the Duke Student Union, which sponsors many free concerts and recitals and maintains a classical record library for student use.

Students who take pleasure and satisfaction in speech and dramatics will find stimulating outlets for their talents. The Debate Council provides qualified students a chance to develop analytical and logical thinking in formal and informal discussions and debates. The varsity debate team has established an excellent record in intercollegiate debating, both regionally and nationally. The presence on the campus of WDBS, a very active college radio station, provides experience in production, business management, engineering, and sales. The station broadcasts for more than eighteen hours a day and enlists a large audience on both campuses.

Creative dramatic experience is well supplied by the Duke Players and Hoof 'N' Horn. For many years the Players have put on distinguished productions of classical and modern plays. Using both arena style production in their own theatre, and proscenium style in the University auditorium, the organization presents three major plays every year, plus a number of experimental plays and readings. Aspiring playwrights have a chance to see their own work produced. Indeed, all aspects of design, lighting, business management, writing, and acting are available to all undergraduates of the Colleges. Hoof 'N' Horn, a younger organization, directs its attention to an annual production of a musical comedy. Student writers, composers, arrangers, directors, designers, dancers, singers, and technicians cooperate to produce highly original and diverting shows.

Duke University houses the Brummer Collection, a treasure of sculpture and decorative arts of the Middle Ages and the Renaissance. The works are exhibited for the enjoyment of the community and the investigation of students and scholars.



The practical art studio



Duke teams play in the Atlantic Coast Conference

Intercollegiate Athletics

The intercollegiate athletic program is controlled entirely by the University through the Athletic Council composed of seven members from the faculty, administration, and alumni groups. Representative freshman and varsity teams are trained in football, basketball, baseball, track, cross country, golf, soccer, lacrosse, swimming, tennis, fencing, and wrestling. Schedules are arranged to include both the schools in the Atlantic Coast Conference, of which the University is a member, and others in the South, North, East, and Middle West. Football and basketball are always the most popular spectator sports. The other sports also have their devoted followers. Over the years many excellent teams and athletes have represented the school.

Physical Activities

All undergraduate students of Duke University must engage in some type of physical activity for four semesters. For men this requirement may be met through an approved program of personal physical fitness, which may include participation in intramural sports. It may be satisfied by four semesters of courses in physical education. Such courses help to improve body control and strength, to stimulate the development of mental and physical alertness, to establish habits of regular exercise, and to give training and experience in various kinds of recreational sports which the student can enjoy during and after college.

In addition to the required work in physical activity, the student may choose to engage in the well-developed intramural program, which embraces a dozen sports and enlists the participation of a large percentage of the men students. In a typical year more than 2,000 students on many fraternity, dormitory, and organizational teams participate in tournaments to compete for more than fifty trophies. The program is deservedly popular because it enables every student to choose the sport he most enjoys and because students themselves serve as their own managers.

The program of the Health and Physical Education Department of the Woman's College is designed to give the women students an appreciation of the value of activity for general physical well-being, skill in one or more activities which can be enjoyed as recreation during and after college, a well-developed and well-coordinated body, and a knowledge of good posture and efficient handling of the body in everyday activities. Through individual conferences following the testing program of Freshman Week, entering students are assigned to special kinds of classwork as needed, such as swimming, posture, fundamentals of movement, rhythm, or sports. During the two years of required physical education,

students elect their courses from a large number of activities including individual, dual, and team sports, aquatics, conditioning exercises, and several types of dance.

The dance group, the swimming club, and the other sports clubs of the Woman's Recreational Association give opportunities for each student to take part in the types of intramural activities most interesting to her. The swimming pool, tennis courts, bowling alleys, and other athletic equipment are available to all students for use at specified times.

In order to maintain certain hygienic standards of physical education and intramural athletics, the University has made available for all students the necessary uniforms, facilities, and laundry services.



Students relax in a coed football game



East Campus students in modern dance class

Student Services

Health

The Student Health Program is closely related to the Teaching Hospital of the Duke University Medical Center. This arrangement provides an unusually comprehensive service, available at all times. The cost, for regularly enrolled students, is included in the general fee paid each semester, and in the fees charged each student in the summer quarter.

The service is under the direction of the University Physician with the cooperation of the Staff. It includes hospitalization in Duke Hospital, as deemed necessary by the Hospital staff, but limited to thirty days; medical and surgical care under the supervision of a senior physician or surgeon; drugs, X-ray work, and ward nursing. Special nursing is not covered. Students pay for board while in the hospital. Refraction of eyes, treatment of teeth and of all chronic and pre-existing conditions, such as diseased tonsils, hernias, pilonidal cysts and other elective surgery, chronic skin conditions, endocrine disturbances, etc. are not included. The cost of any necessary braces and orthopaedic appliances, as well as of special nursing, must be borne by the students, and blood used for transfusions must be paid for or replaced.

If students have insurance providing hospitalization, surgical, or medical benefits, the benefits shall be applied to the cost of their medical care. Accidents or illnesses occurring during vacations or while off the campus, are not included in this service. A special commercial policy available only to regularly enrolled Duke students furnishes complementary protection, if desired.

Advisory consultation with a psychiatrist at no expense is available to students through referral either by the Student Health Physicians or by the Deans, but office visits for psychotherapeutic interviews cannot be included in this service.

A woman physician is in charge and a nurse in constant attendance at the Woman's College Infirmary. Women students receive ambulant care at regular office hours and patients in this Infirmary can be transferred to the Duke Hospital at any hour of the day or night. Male students receive ambulant care at the Student Health Office in the hospital during regular office hours. The emergency service and the specialist consulting services of the Hospital and Medical School are always available.

Students are given a careful physical examination upon arrival at the University. Every applicant should be re-vaccinated against smallpox within three years before admission to the University. It is urgently advised that the standard Salk vaccine routine for poliomyelitis be completed by all students and that all male undergraduates be actively immunized to tetanus by injections of toxoid.

Simple directions for procedure in reporting the student's need for medical care are contained in the Student Handbook supplied to each student upon entering.

Appointments Office

The Appointments Office has the responsibility for aiding in the placement of Duke students in teaching positions and in business and commercial firms after graduation. The Director of the Appointments Office and other members of the office staff also do some career counseling. The Appointments Office maintains contact with about five thousand companies and schools, of which approximately 10 per cent send representatives to the campus each year.

Counseling

Duke provides a free program of educational, vocational, and personal counseling to students enrolled at the University. Students may visit the Counseling Center at any time. The Center also administers special group testing services for the University as well as for a variety of national testing programs.

Student Union

The Student Union is dedicated to stimulate, promote, and develop the social, recreational, educational, and spiritual activities of all students. In order to fulfill its large purpose, the Student Union operates diverse broad and expanding programs. Since it is student-centered, it utilizes the talents and energy of several hundred undergraduates in effecting its programs. Housed in Flowers building, it maintains lounges, Hi-Fi record collections, game rooms and offices for student organizations. Through its many committees, the Union arranges art exhibitions, photographic displays and contests, promotes bridge clubs, arranges sings, dances, and get-togethers. It also sponsors major attractions, such as plays by professional groups, distinguished speakers, and prominent musical and dance groups. The Union's Educational Affairs Committee promotes symposia on questions of general interest and importance which draw figures of national and international eminence to the campus.

Publications

On every college campus student publications provide a direct and valuable opportunity for student opinion and literary expression and become thereby an adjunct to the educational process. Both men and women undergraduates will enjoy exciting and stimulating experiences through working on the numerous publications issued at Duke. All publications are under the supervision of a Board composed of representatives of students, faculty, and administration. The *Archive,* a literary magazine, publishes student creative writings in fiction, poetry, essays, reviews. Throughout a long life it has maintained a high quality of literary expression, and many of its student contributors have in their maturity justified their early literary promise. The *Chronicle,* the student newspaper—"The tower of campus thought and action"—has served for more than a half century as the forum of student opinion. Published three times a week, it is consistently rated high by national college press associations. The *Chanticleer,* the yearbook, serves as a review of the school year and records in text and pictures the individuals, organizations, and events that contribute academically and socially to the college experience. The *Peer,* a quarterly magazine, is devoted to collegiate life and interests and contains stories of general interest, essays, and cartoons. Another quarterly, the *Duk-Engineer,* appears under the auspices of the students in the School of Engineering. Semi-technical in nature, it provides articles by students on new developments in the profession, news of engineering societies and their activities, and local items of interest to engineers.

ADMISSION

Candidates for regular admission must submit completed applications no later than February 1, and normally do so during the fall of the senior year. For this group, decisions are mailed on April 15.

Application forms and instructions regarding procedure and necessary documents to be included will be sent upon request to the Office of Admissions, Duke University, Durham, North Carolina 27706. A nonrefundable processing fee of $10.00 must accompany the submission of the full application form.

New students are admitted for the academic year at the opening of school in the fall.

The size of the entering classes is approximately as follows: Trinity College, 650; The Woman's College, 350; School of Engineering, 140; School of Nursing, 80. Since enrollment is limited, the Committee on Admissions selects those students who in its judgment are best qualified to benefit from the opportunities which the colleges offer. Selection is based not only upon academic grades and test scores but also upon recommendations of school officials and other personal accomplishments.

Although there are no inflexible subject matter requirements, at least fifteen acceptable units of secondary school credit must be presented. Of these at least twelve must be in college preparatory subjects: English, foreign language, history and social studies, mathematics, and physical or biological sciences. Applicants for the School of Engineering are advised to present four units of mathematics and at least one unit in physics or chemistry.

Students applying for admission are required to take the Scholastic Aptitude Test, the English Composition Test, and two other achievement tests of their own choosing given by the College Entrance Examination Board. It is recommended that an applicant who has had two or more years of a foreign language in secondary school take the achievement test in that language. The foregoing recommendation is not applicable to

candidates for the School of Engineering. Candidates applying to the School of Engineering must include the appropriate mathematics test.

While the Achievement Tests are used initially for admission, the test results may subsequently be used for course placement purposes.

Prospective students are urged to broaden their reading outside of class during their senior year and to make the acquaintance of books and magazines that do not form part of the subject matter of their courses. At the same time, they should take every opportunity to increase their competence in writing. Those who cannot write simple, clear, grammatical English prose will be progressively at a serious disadvantage in the competition for admission and also in the general work of the freshman year. Careful attention to correct English usage in correspondence and on application blanks cannot be stressed too emphatically for candidates for admission.

Early Decision

For the well-qualified student who has definitely decided to enter Duke if accepted, the University offers to reserve a place by "early decision" on December 1 of the student's senior year in secondary school. The deadline date for completing applications for early decision is November 1; therefore prospective early decision candidates should make arrangements to take the Scholastic Aptitude Test and three Achievement tests, including English Composition, on or before the July testing date preceding their senior year.



Freshmen arriving for Orientation



The Woman's College Library on East Campus

Transfer

Admission by transfer from other institutions may be arranged for a number of students, under certain well-defined regulations. All such candidates must submit official transcripts of all work completed at other colleges, accompanied by a statement of honorable dismissal, and scores on the Scholastic Aptitude Test of the College Entrance Examination Board. Courses in which a grade less than "C" has been earned cannot be accepted for transfer credit. Students will not be considered for transfer beyond admission to the junior class. Further detailed regulations for admission by transfer may be obtained from the Office of Admissions.

A small number of special students of mature age may be admitted for such courses of instruction as their earlier training and experience may qualify them to take. They may not be accepted, however, as candidates for a degree in a regular course unless they are able to meet all normal requirements for admission which apply to all beginning students.

Former students who have for various reasons withdrawn from college and who wish to continue their collegiate careers should apply to the Office of Admissions, with a detailed account of their activities since withdrawal from college.

COLLEGE EXPENSES

Each student going to college should analyze carefully his financial situation. In making such an analysis it should be recognized that the primary responsibility for defraying the cost of an education lies with the student and his family. The typical college student can depend upon some contribution from his family's current income, a proportionate share of family savings, and anticipated income from summer employment. The number of years of study contemplated and the number of dependent children in the family should be considered in computing the funds which will be available in a particular year.

Fees paid by the students cover only a part of the cost of their instruction and of the operations of the University. Income from endowment and contributions from the alumni, alumnae, and other public-spirited men and women meet the balance, which constitutes more than half the total cost.

Estimated Costs

Certain basic expenditures are to be considered in preparing a student's budget such as tuition, the general fee, room and board. These expenditures together with a reasonable amount allotted for books and supplies are shown in the following table.

	Men	*Women*
Tuition	$1,600.00	$1,600.00
General Fee	200.00	200.00
Room Rent (Double Room)	335.00	360.00
Board	*600.00	†500.00
Books and Supplies	120.00	120.00

*Cafeteria estimate.
†Board rate.

Total expense involved in attending the University depends to a large extent upon the tastes and habits of the individual. It is realistic to suggest that the average Duke student, however, can plan a budget of $3300.00 for the academic year. Travel costs, clothing purchases, and other optional major expenditures would have to be added to this estimate.

It should be noted that the General Fee is a charge which represents the total of the student health, publications, athletic, library, damage, Student Union, and other fee charges.

An initial, non-refundable registration fee of $20.00 is charged all new students. This fee as well as the required $50.00 deposit is paid upon acceptance into the University. One-half of the deposit serves as a continuing room deposit for succeeding semesters, and the other half serves as a continuing reservation deposit.

Since the undergraduate colleges are residential colleges, all students except day students living at home are required to live in the residence houses. The majority of the rooms on both campuses are double rooms occupied by two students. A limited number of single occupancy rooms are available.

Dining facilities on the West Campus include two cafeterias with multiple-choice menus, and the Oak Room, where full meals and *à la carte* items are served. On the East Campus, resident undergraduate women board in dining halls at a fixed fee of $500.00 per academic year.



The Gothic Book Shop offers antiquaria and contemporary books

Financial Aid

The colleges are interested in students of ability and ambition; the total charge should not be a deterrent to those students who are unable to defray the entire cost of their education. Assistance is made available to qualified students through awards, scholarships, loans, and grants. Scholarship and loan funds, including those provided in the National Defense Education Act of 1958, provide help for about thirty percent of each entering class. Part-time employment in various divisions of the University often supplements this amount for the particularly needy student, or provides modest help for the student not on scholarship or loan funds. Approximately thirty per cent of each freshman class receives financial assistance.

Specific awards include the following:

Angier B. Duke Memorial Scholarships, with a value from $200 to $2800, are awarded to men and women on a basis of merit. Though granted for one year, they are renewable from year to year so long as the student does satisfactory work.

Four ***W. N. Reynolds Memorial Scholarships,*** ranging in value up to $2800, are awarded on merit to children of employees of the R. J. Reynolds Tobacco Company, its subsidiaries and affiliates, and to residents or natives of North Carolina. They are renewable annually on the basis of satisfactory performance.

Two ***Mary Duke Biddle Scholarships in Music Composition*** at a fixed stipend of $2500 per student are available to each entering class. They are renewable from year to year so long as the student does satisfactory work. The student wishing to apply for this award will proceed in the normal manner but be required to submit samples of his musical compositions. Eligibility is limited to students desiring to major in music.

A number of ***National Methodist Scholarships,*** valued at $500 per year, are available on a basis of demonstrated need to Methodist students who have given evidence of leadership in their local Methodist Youth Fellowship Groups.

Students preparing to enter full-time religious work are eligible to apply for ***Christian Vocations Scholarships*** on the basis of need. Students approved are required to sign a note each semester for the amount of financial assistance granted to them. These notes will be cancelled upon evidence that the student has entered full-time Christian work after graduation.

Scholarships from industry, ranging in value from $200 to $2,000 are awarded to students with excellent academic records, and are renewable for each of the years of undergraduate study.

Several ***Duke University School of Nursing Scholarships,*** the value of each being determined by financial need, are awarded to the entering class. They are awarded on the basis of merit. Though granted for one

year, they are renewable from year to year so long as the student does satisfactory work.

All applicants for financial aid who are accepted for admission will receive every consideration for available financial aid.

Details of all scholarships and other financial aids may be obtained from the Office of Admissions.

The main quadrangle on West Campus



GENERAL INFORMATION

Class Attendance. Regular and punctual attendance in class work is expected of all students. Requirements for continuation in college and for graduation emphasize the desirability of the student assuming responsibility for class attendance.

Grading System and Quality Credit. Grades in courses are recorded as A, B, C, D, F. A passing grade may be modified by a plus (+) or a minus (−). Quality points are assigned to each grade: four quality points for A, three for B, two for C, one for D. Duke offers a Pass/Fail grading system to juniors and seniors in courses outside of their major fields. This method of evaluation places more emphasis on the subject itself rather than on a letter grade.

Conduct of Students. Duke University expects and will require of all its students continuing loyal cooperation in developing and maintaining high standards of scholarship and conduct.

The University wishes to emphasize its policy that all students are subject to the rules and regulations of the University as currently in effect or from time to time put into effect by the appropriate authorities of the University.

Any student, in accepting admission, indicates his willingness to subscribe to and be governed by these rules and regulations and acknowledges the right of the University to take such disciplinary action, including suspension and/or expulsion, as may be deemed appropriate, for failure to abide by such rules and regulations or for conduct adjudged unsatisfactory or detrimental to the University.

General oversight of the conduct of students and the administering of discipline are under the supervision of the deans of the colleges. Immediate supervision of freshmen is entrusted to the college's dean of

freshmen; however, through the expressed willingness of the students in the colleges to assume the responsibilities of maintaining high standards of morality, their student bodies have become self-governing to a great degree. A Judicial Board, composed of students duly selected by the student government associations, exercises the authority granted the students by the officers of their respective colleges to investigate all cases of misconduct, as well as all other cases of violation of proper standards and traditions, and to recommend to college officers penalities based on their findings.

Automobiles. Freshmen are not permitted to own or operate motor vehicles at the University. Upperclassmen are allowed to operate cars, provided they are registered and operated in accordance with University regulations. A registration fee of $15.00 per semester is charged for each student-operated car.

Bus Service. Free bus transportation is provided by the University between and through the campuses.

Students enjoy the spacious Sarah P. Duke Gardens



COURSES

The following list of courses open to students in the undergraduate colleges is provided to suggest the range of courses available.

Art:

Aesthetics

The Principles of Art Criticism
History of Aesthetics

History of Art

Introduction to Art History
Art and Archaeology of the Hellenic World
Roman Art and Archaeology
Mediaeval Architecture
Mediaeval Painting and Sculpture
Art of Northern Europe in the Fifteenth and Sixteenth Centuries
Italian Renaissance Art
Seventeenth Century Painting and Sculpture in Europe
American Art
The History of Prints and Drawings
Renaissance and Baroque Architecture
The Rise of Contemporary Architecture
Painting and Sculpture in the Eighteenth and Nineteenth Centuries
Modern Painting and Sculpture
Aegean Art
Early Greek Art
Early Mediaeval Architecture
Romanesque Sculpture
Architecture of Britain
Architecture of North America
Latin American Art
Pre-Columbian Art and Archaeology
Research Problems in the North Carolina Museum of Art

Design

Beginning Studio
Painting
Advanced Drawing and Color
Advanced Painting
Printmaking

Asian Languages:

Chinese

Intensive Elementary Chinese
Intensive Intermediate Chinese

Hindi-Urdu

Modern Indian Literature
Intensive Elementary Hindi-Urdu
Intensive Intermediate Hindi-Urdu
Advanced Hindi Reading and Composition
Special Studies in South Asian Languages

Japanese

Intensive Elementary Japanese
Intensive Intermediate Japanese

Botany:

Biology
Plant Identification
Introductory Oceanography
Plant Anatomy
Principles of Heredity

General Bacteriology
Plant Morphology
Introductory Plant Physiology
Plant Ecology
Genetics
Lichenology
Bryology
Phycology
Mycology
Evolution
Cytology
Plant Biosystematics
Plant Metabolism
Plant Water Relations
Plant Systematics
Community Analysis and Classification
Principles of Plant Distribution
Physiology of Growth and Development
The Environment

Business Administration:

Principles of Accounting
Managerial Economics
Business Statistics
Corporation Finance
Investments
Marketing
Accounting Theory
Corporate Accounts
Auditing, Theory and Practice
Income Tax Accounting
Business Law
Commercial Law for Accountants
Business Administrative Organization
Personnel Management
Quantitative Methods in Business
Advanced Industrial Accounting and Management
Budgeting and Control
Business Policy
Advanced Accounting Seminar

Chemistry:

General Inorganic Chemistry
Advanced General Chemistry
Physical Chemistry of Aqueous Solutions
Quantitative Analysis
Quantitative and Instrumental Analysis
Organic Chemistry
Qualitative Organic Analysis
Elements of Theoretical Chemistry
Physical Chemistry
Nuclear Chemistry
Inorganic Chemistry
Chemical Instrumentation
Advanced Analytical Chemistry
Advanced Organic Preparations
Intermediate Organic Chemistry
Structural Analysis of Spectroscopic Methods
Thermodynamics
Introductory Quantum Chemistry

Classical Studies:

Greek

Elementary Greek
Intermediate Greek
Sight Reading in Greek Prose
Greek Historians
Greek Orators
Homer and the Greek Lyric
Greek Tragedy and Comedy
Greek Prose Composition
Homer
Greek Lyric Poets
Aeschylus
Sophocles
Euripides
Aristophanes
Thucydides
Greek Orators
Plato
Hellenistic Poetry
Advanced Prose Composition

Latin

Elementary Latin
Intermediate Latin: Cicero
Intermediate Latin: Vergil
Latin Prose and Poetry
Roman Comedy
The Roman Novel
Roman Stoicism
Roman Epicureanism
Sight Reading in Classical, Mediaeval, and Renaissance Latin
Roman Elegy: Propertius and Tibullus
Ovid
The Roman Historians: Caesar and Sallust
The Roman Historians: Livy and Tacitus
Latin Prose Composition
The Verse Treatise
Roman Satire
Epic: Vergil
Epic: Lucan and Statius
The Prose Epistle
The Epistle in Verse
Fragments of Early Latin

Lyric and Occasional Poetry
Roman Oratory
Mediaeval Latin
Advanced Latin Composition

Classical Studies

Mythology
Roman Literature in English Translation
Greek Literature in English Translation
Greek History
Roman History
Classical Art and Archaeology
Greek Sculpture
Greek Painting
Roman Architecture
Roman Painting
Greece to the Orientalizing Period
The Age of the Tyrants and the Persian Wars
The Age of Pericles
The Fourth Century through Alexander
Social and Cultural History of the Ancient World
The History of Rome to 146 B.C.
The Roman Revolution, 146-30 B.C.
Rome under the Julio-Claudians
From the Flavian Dynasty to the Severan

Comparative Literature:

Romanticism
Realism and Symbolism
Foundations in Twentieth-Century European Literature
Readings in European Literature
Modern European Drama
Readings in Scandinavian Literature
The European Epic Tradition
Religious Values in Classical and European Literature
Russian and Polish Romanticism

Economics:

Introduction to Economic Problems and Policies
The Evolution of Economic Ideas
Principles of Economics
Economic Geography of Latin America
Economic Geography of Africa
Fundamentals of Geography
Economic Geography of Southern Asia
The Economic History of the United States
Economic Statistics
The Theory of the Firm
Economic Thought Since Adam Smith
Urban Geography
Money and Banking
Aggregative Economics
Labor Problems
Business and Government
Senior Seminar in Economics
Non-Western Urbanization
Advanced Money and Banking
Business Cycles
Economic Problems of Underdeveloped Areas
Economic History of Europe
State and Local Finance
Statistical Methods
Econometrics
Dynamics of the Labor Movement
Trade Unionism and Collective Bargaining
International Trade and Finance
Competition and Monopoly
Latin American Economics
Public Finance
Soviet Economic History
Soviet Economic System

Education:

Mental Hygiene
Social and Philosophical Foundations of Education
Elementary Education: Principles
Elementary Education: Practice
Elementary Education: Reading
Elementary Education: Language Arts
Elementary Education: Arithmetic
Elementary Education: Science
History of American Education
History of Education in European Culture
Educational Psychology
Children's Literature
Public School Music Education
Public School Music Literature
Vocal Music in the Public School
Instrumental Music in the Public School
Integrated Art in the Public School
Plastic Art in the Public School
Teaching and Supervision of Arithmetic
Comparative and International Education: Industrialized Nations
Principles of School Administration
The School as an Institution
Philosophical Analysis of Educational Concepts
Social History of Twentieth-Century American Education
Introduction to Educational Research
Secondary Education: Principles

Secondary Education: Internship
The Psychological Principles of Education
The Teaching of History and the Social Studies
Teaching Reading in the Elementary School
Supervision of Instruction
Secondary School Organization and Administration
Teaching Reading in the Secondary Schools
The Teaching of Literature in Secondary School
The Teaching of Grammar, Composition, Mechanics, and Usage in Secondary School
Educational and Occupational Information
Principles of Guidance
Personality Dynamics
The Teaching of Mathematics
School Law
Educational Measurements
Science in the Elementary School
The Teaching of High-School Science
Administration of School Property

Engineering: **(See p. 54)**

English:

Freshman Composition
Imaginative Writing
Technical Communication
English for Foreign Students
Advanced Expository Writing
Narrative Writing

Speech and Drama

Essentials of Public Speaking
Persuasive Speaking
History of the Theater
Stagecraft
Play Production
The Speaking Voice
Oral Interpretation of Literature
Essentials of Public Speaking
Argumentation
Broadcasting

English and American Literature and Language

Representative British Writers
Representative American Writers
The English Novel from the Beginnings to 1800
The English Novel in the Nineteenth Century
The English Novel in the Twentieth Century
Twentieth-Century Poetry
Medieval Literary Tradition
English Literature of the Middle Ages
English Literature: Elizabethan and Seventeenth-Century
Satire
Oral Interpretation of Literature
Readings in European Literature
Readings in Scandinavian Literature
Development of the English Language
Modern English Grammar
American Fiction
The European Epic Tradition
American Literature from the Beginning to 1800
American Literature from 1800 to 1860
American Literature from 1860 to 1915
American Literature from 1915 to the Present
American Drama
Conference on Criticism
Conference on Drama
Conference on Poetry
Conference on Fiction
Conference on Prose Non-Fiction or a Special Topic
The Industrial Spirit
Chaucer: The Canterbury Tales
Chaucer: Troilus and Criseyde and the Minor Poems
History of the English Language
Present-Day English
Old English Literary Tradition
Middle English Literary Tradition
Introduction to Folklore
Tudor and Stuart Drama, 1500-1642
Milton
Spenser
The Eighteenth Century
English Literature of the Early Nineteenth Century
English Literature of the Later Nineteenth Century
English Drama, 1642-1800
Shakespeare
Literary Biography
Major Developments in Contemporary American Poetry
Recent Critical Thought
Southern Literature
Literary Criticism

English Prose of the Sixteenth Century
English Non-Dramatic Poetry of the Sixteenth Century

Forestry:

Conserving Natural Resources

Geology:

Physical Geology
Historical Geology
Introductory Oceanography
Crystallographic Mineralogy
Fundamentals of Mineralogy
Igneous and Metamorphic Rocks
Sedimentary Rocks
Principles of Stratigraphy
Economic Geology
Introduction to Geologic Field Methods
Structure
Advanced Stratigraphy
Geological Oceanography
Principles of Geological Oceanography
Sedimentary Petrography
Sedimentary Minerals
Sedimentary Geochemistry
Invertebrate Paleontology
Micropaleontology
Paleoecology
Geomathematics

Germanic Languages and Literature:

Elementary German
Intermediate German
Introduction to German Literature
Scientific German
German Prose Fiction
German Drama of the Nineteenth Century
German Conversation
Survey of German Literature
Contemporary German Literature
Introduction to Goethe
The German Lyric
German Literature in English Translation
Goethe
Eighteenth Century
Middle High German
German Romanticism
Kleist, Grillparzer, and Hebbel
Heinrich Heine and His Time
Nineteenth-Century Literature
The Twentieth Century
Seventeenth-Century Literature
History of the German Language
Renaissance and Reformation Literature
The Teaching of German
German Cultural History

Health and Physical Education—Trinity College and The School of Engineering:

Foundations of Physical Education
Beginning and Intermediate Swimming
Swimming and Life Saving
Tumbling, Rebound Tumbling and Apparatus
Badminton-Handball
Basketball-Speedball
Combatives
Soccer-Lacrosse
Advanced Swimming and Water Safety
Tennis-Volleyball
Golf
Track and Field Activities
Individual Development
Fencing
Bowling and Square Dancing

Special Methods in Physical Education

Athletic Coaching in Secondary Schools

Theory and Practice in Physical Education

History and Principles of Physical Education
Recreational Leadership
The Administration of Physical Education and Athletics in Secondary Schools
Protective Practices in Physical Education

Health Education

School Health Problems

Health and Physical Education—Woman's College:

Freshman Activity
Sophomore Activity
First Aid and Safety in Physical Education
History and Principles of Physical Education
The Teaching of Physical Education in Elementary Schools
Methods and Materials in Recreation
Mammalian Anatomy
Kinesiology
Individual Physical Education

Organization and Administration in Physical Education
Measurement and Evaluation in Physical Education
History of the Dance
Methods and Materials in Physical Education
Advanced Methods and Materials in Physical Education

Health Education

Health Education Fundamentals, Methods, and Materials
School Health
Health Problems of Developing Countries
Health Problems of Metropolitan Areas
Gereology and Health

History:

A History of European Civilization
Non-Western Civilizations
The Development of American Democracy to 1865
The Development of American Democracy, 1865 to the Present
Modern Technology
Ancient and Medieval History
Naval History and Elementary Strategy
Introduction to the Civilizations of Southern Asia
Renaissance and Reformation
Political and Constitutional History of England
Social and Cultural History of England
History of Rome
America in the Colonial and Early Modern Era
America in the Twentieth Century
History of Africa
European Imperialism and Colonialism
History of Socialism and Communism
Diplomatic History of the United States
City and Frontier in American History
Greek History
History of Latin America Through the Formation of the National Governments
Inter-American Affairs
The Development of the Major South American Powers
Europe in the Twentieth Century
Foreign Relations of the European Powers
Nineteenth-Century Europe
China in Modern Times
History of Modern Japan
Military History
The History of the South
The Rise of Modern Science
Russia from Ivan the Terrible to the Present
Reform and Politics in Nineteenth-Century America
Modern European Intellectual and Cultural History
The Agrarian Spirit
The Industrial Spirit
The Changing South
The History of Russia, 1801-1917
The United States, 1850-1900
Recent Interpretations of United States History
The Old South
The Diplomatic History of the United States
The Old Regime and the French Revolution, 1661-1815
The Reformation of the Sixteenth Century
The Age of Counter-Reformation
Recent Interpretations of Modern European History
The Hispanic Colonies and Republics in America
The Institutional, Cultural, and Social History of Hispanic America
The History of Modern India and Pakistan, 1857-1947
Social and Intellectual History of the United States
Topics in the History of Science
Central Europe, 1849-1914
Reform and Politics in Nineteenth-Century U.S.A.
Origins of Indian Civilization
The British Empire in the Nineteenth Century (From 1783)
The Commonwealth in the Twentieth Century

Undergraduate Seminars

Renaissance Intellectual History
Seminar in Twentieth-Century Europe
Problems in American Intellectual History
The Progressive Era Through the New Deal
Seminar in American History Before 1789

Problems in Nineteenth-Century American Reform and Politics
Nationalism and Communism in the Far East
From Rural to Urban Society in the United States
Nationalism and Freedom in Nineteenth-Century Europe
Studies in the History of Socialism and Communism
European Expansion and Imperialism
Europe in the Age of the Reformation, 1500-1650
The English Renaissance
Class and Social Mobility in English History
The Age of Newton

Interdisciplinary Courses:

Introduction to the Civilizations of Southern Asia
Introductory Journalism
Mass Media in Contemporary Society
The Changing South

Linguistics:

Introduction to Linguistics
Language and Society
Linguistic Anthropology
Development of the English Language
Modern English Grammar
Old English Grammar and Readings
History of the English Language
Old French Literature
Middle High German
History of the German Language
Symbolic Logic
Philosophy of Language
General Semantics and Theory of Languages
Romance Linguistics
Old Spanish Language

Mathematics:

Introduction to Finite Mathematics
Introductory Calculus
Introduction to Digital Computation
Intermediate Calculus
Introduction to Linear Algebra
Applied Mathematical Analysis
Modern Algebra
Introduction to Linear Programming and Game Theory
Number Theory
Elementary Differential Equations
Basic Statistics
Probability and Statistics
Advanced Calculus
Junior Mathematics Seminar
Elementary Topology
Complex Analysis
Geometry for Teachers
Intermediate Analysis
Numerical Analysis
Theory of Numbers
Algebraic Numbers
Sample Designs
Abstract Algebra
Design of Experiments
Combinatorial Analysis
Arithmetic of Polynomials
Non-Parametric Statistics
Introductory Topology
Algebraic Topology
Probability
Applied Mathematical Statistics
Least Squares Analysis of Linear Models
Applied Mathematical Methods
Foundations of Mathematics
Applications of Stochastic Processes
Analysis I, II
Multivariate Statistics

Medical Science:

Anatomy of the Lower Extremities as it Relates to Locomotion

Military Science:

Air Force Aerospace Studies

Leadership Laboratory
Defense of the U. S.
World Military Systems
Leadership Laboratory
Growth and Development of Aerospace Power
The Problems of Flight and Applied Air Sciences of Weather and Navigation
The Professional Officer

Naval Science

Naval Orientation
Naval History
Introductory Psychology
Naval Weapons
Navigation
Naval Operations
Naval Engineering
Principles and Problems of Leadership
Evolution of the Art of War
Modern Basic Strategy and Topics

Music:

Theory and Composition

Music Theory I
Composition I
Music Theory II
Music Theory III
Orchestration

History and Literature

Introduction to Music Literature
Masterworks of Music Literature
Choral Literature
Piano Literature
Solo Song Literature
Twentieth-Century Music
Organ Literature
History of Music
Music in the Eighteenth Century
Music in the Nineteenth Century
Opera Literature
World Music

Music Education and Pedagogy

Vocal Diction
Piano Methods and Materials
Conducting
Techniques of Keyboard Ensemble and Accompanying
Public School Music Education (Elementary)
Public School Music Literature (Elementary)
Vocal Music in the Public School (Secondary)
Instrumental Music in the Public School (Secondary)

Nursing: **(See p. 55)**

Philosophy:

Knowledge, Fact and Value
Logic
History of Philosophy: Ancient and Modern
Philosophy of Religion
Symbolic Logic
Philosophy of Science
Political and Social Philosophy
Social Ideals and Utopias
Philosophy of Language
Epistemology
Metaphysics
Ancient and Modern Ethical Theories
Introduction to Medieval Philosophy
Aesthetics: The Philosophy of Criticism
Contemporary Ethical Theories
The Philosophy of History
Political Values
Plato
Aristotle
Medieval Philosophy
Kant
British Empiricism
Continental Rationalism
Recent and Contemporary Philosophy
American Pragmatism
Introduction to the Philosophy of Science
Philosophy of Science
Philosophy and the Sciences
Logic
General Semantics and Theory of Language
Philosophical Cosmology
Philosophical Analysis
Epistemology
Metaphysics
Philosophy of Mind
Critical Philosophy

Physics:

Introductory Physics
Fundamentals of Physics
General Physics
Modern Physics
Electronics
Thermodynamics and Kinetic Theory
Classical Mechanics
Introduction to Solid State Physics
Introduction to Quantum Mechanics
Advanced Physics Laboratory
Advanced Electronics
Theoretical Physics
Electricity and Magnetism
Elementary Investigations

Political Science:

Introductory Courses

The American Political System
Special Introductory Section
The American Political System

Political Theory and Methodology

Introduction to Political Philosophy
Democratic Theory and Political Reality
Introduction to Law
Introduction to American Political Thought
Contemporary Political Ideologies
Principles and Methods of Political Inquiry
Empirical Theory and Methodology

Political Philosophy from Plato to Machiavelli
Modern Political Thought
Recent and Contemporary Political Theory
American Political Theory
Comparative Political Analysis and Political Development

Comparative Government and Politics

Major European Governments
Comparative Government and Politics: Latin America
Problems of Political Development in the New States
The Government and Politics of the U.S.S.R.
Soviet Foreign Relations
Comparative Government and Politics: Southern Asia
Comparative Administrative Law
Comparative Government and Politics: Western Europe
The British Commonwealth
Comparative Government and Politics: Sub-Saharan Africa

American Government and Public Administration

State and Local Government Today
American Political Parties and Practical Politics
The Judicial Process
Groups in American Politics
Politics and the Media of Mass Communication
Political Behavior in Elections
Political Behavior in Policy Making
Science and Government
Public Administration
Administrative Responsibility
Legislation
Government and Planning
Government Regulatory Policy and Administration
Political Implications of Economic Legislation
The Changing South
American Constitutional Law and Theory
American Constitutional Law and Current National Problems
Problems of State and Local Government in the United States
American Political Institutions
Civil-Military Relationships in American Government
Public Administrative Organization and Management
National Administration
Administrative Law and Process
Government Administration and Public Policy
The National Party System
Comparative State Parties and Politics
The Judicial Process
Problems of Urban Government
Urban Administration

International Law and Relations

Elements of International Relations
Modern International Politics
The New States of Africa in World Affairs
U. S. Foreign Policy
Control of American Foreign Policy
Problems in International Politics
International Public Organization
International Law

Psychology:

Introductory Psychology
Personality
Introductory Social Psychology
Comparative Psychology
Applied Psychology
Advanced General Psychology
Psychology of Personality
Statistical Methods in Psychology
Experimental Methods in Psychology
Child Psychology
Adjustment of the Pre-School Child
Adolescent Psychology
Principles and Methods of Psychological Evaluation
The Psychology of Individual Differences
Personality and Behavior Disorder
Instrumental Behavior
The Psychology of Learning
Experimental Approaches to Personality
Experimental Social Psychology
Psychology of Perception and Thinking
Motivation
Psychology and International Relations
Physiological Psychology
Introduction to Biological Psychology
Personality Theory
Psychology of Perception
Cognition and Higher Mental Processes

Conditioning and Learning
Developmental Psychology
Biological Psychology
Research Methods in Social Psychology
Social Psychology
Physiological Bases of Behavior
Personality and Experimental Dynamics
Theoretical Psychology
Functional Neurophysiology
The Electroencephalogram and Psychological Function
Behavioral Correlates of Brain Damage in Man
Personality Theory and Assessment
History of Psychology

Religion:

The English Bible
The Religion of the Bible
Jesus: The Man and His Message
Introduction to Christian Ethics
Survey of the World's Living Religions
Principles of Investigation
The Religion of the Bible
The Prophets of the Old Testament
The Book of Job in World Literature
The Mission and Message of Jesus
The Life and Letters of Paul
History of the Christian Church through the Reformation
History of Christianity since the Reformation
The Correspondence of the Great Fathers of the Church
Christianity in America
Contemporary Religions in the United States
Christian Beliefs
Problems of Religious Thought
Current Interpretations of Christianity
Christian Ethics
Ethics and Modern Technology
Christian Marriage and the Family
Religions of the Ancient Near East
Religious Quest of the Greco-Roman World
Non-Christian Religions of the Modern World
World Religions and Social Change
Myth and Symbol
Mysticism: Sacred and Profane
Psychology and Religion
Religious Values in Classical and European Literature
Recent Literature and Its Religious Implications
Man in Modern Prophetic Thought
Contemporary British Theology
The Theology and the Gospel in the Epistles of John
The Theology of Karl Barth
Religions of East Asia
Origins of Indian Civilization
Sociological Analysis of Religion
Institutional Analysis of Religious Bodies

Seminars

Biblical Studies
Church History
Theology and Ethics
Christianity and Culture
History of Religions

Romance Languages:

French

Elementary French
Intermediate French
Spoken French
Masterworks of French Literature
The Sixteenth Century
Explication des Textes
French Romanticism
Toward Modernism in French Poetry
French Drama of the Nineteenth Century
French Drama of the Twentieth Century
Diderot
Masterpieces of French Medieval Literature
French Drama of the Seventeenth Century
Seventeenth-Century Poetry, Novel, and Rhetoric
The French Enlightenment
The Novel in the Eighteenth Century
Advanced Composition and Conversation
Contemporary French Life and Thought
Advanced Composition and Syntax
French Phonetics
Mallarmé and Rimbaud
Old French Literature
The Nineteenth-Century French Novel
French Literary Criticism
History of the French Language
From Renaissance to Baroque in French Literature of the Sixteenth Century
French Poetry of the Twentieth Century
Contemporary French Theatre
Proust
Baudelaire
French Literature and Thought in the Age of Enlightenment

French Literature of the Twentieth Century

Italian

Italian
Masterworks of Italian Literature in English Translation
Conversation

Portuguese

Portuguese
Conversation

Spanish

Elementary Spanish
Intermediate Spanish
Introduction to Spanish Literature
Spoken Spanish
Representative Writers of Spanish American Literature
Spanish Literature of the Renaissance and the Baroque
Spanish Romanticism
The Generation of 1898
Analysis of Great Spanish Authors
Spanish Realism
Golden Age Literature: Cervantes
Advanced Conversation
The Origins of the Spanish Novel
Spanish Lyric Poetry before 1700
The Origins of the Spanish Theater
Modern Latin American Literature
Contemporary Latin American Literature
Old Spanish Language
Old Spanish Literature
Spanish Phonetics
Advanced Composition and Syntax
Nineteenth-Century Novel
Romanticism in Spain
Golden Age Literature: Cervantes
Golden Age Literature: The Drama
Contemporary Spanish Literature: Essay and Lyric Poetry
Contemporary Spanish Literature: Novel

Romance Languages

The Teaching of Romance Languages

Slavic Languages and Literatures:

Elementary Russian
Intermediate Russian
Advanced Russian
Russian Literature and Culture Through the Nineteenth Century
The Russian Theatre and Drama
Twentieth-Century Russian Prose
Modern Russian Poetry
The Novelists of Nineteenth-Century Russia
Soviet Literature and Culture
Pushkin
Advanced Composition and Syntax
The Russian Short Story: Eighteenth Century to the Present
Leo Tolstoy
Gogol
Chekhov
Fyodor Dostoevsky
Ivan Turgenev
Polish Literature of the Twentieth Century
The Structure of Polish in Relation to Russian
Readings in Contemporary Polish Prose in the Original
Russian and Polish Romanticism

Sociology and Anthropology:

Sociology

Introduction to Sociology: Concepts and Procedures
Introduction to Sociological Research
Sociology of Modern Africa
Comparative Social Structure
Introduction to Population and Human Ecology
The Sociology of Mass Communication
Deviant Social Behavior
Urban Sociology
Industry and Society
The Family
Sociology of Religion
Sociology of the South
The Sociology of the Arts
Introduction to Industrial Sociology
The Negro in America
Collective Behavior and Social Movements
The Changing South
Social Stratification
The Sociology of Occupations and Professions
Population Dynamics and Social Change
Community and Society
The Sociology of Modernization
Social Institutions
Race and Culture
Religion and Social Change
The Socialization Process
Social Attitudes and Individual Behavior

Social Structure and the Life Cycle
Principles of Sociological Analysis
Methodology in Sociology
Statistical Analysis in Sociology

Anthropology

General Anthropology
Cultural Anthropology
Introduction to the Civilizations of Southern Asia
World Ethnography
Peoples of the World: American Indian
Peoples of the World: Oceania
Peoples of the World: Asia
Cultural Change and Stability
Political Anthropology
Comparative Social Organization
The Anthropology of Agriculture
The Changing South
Society and Culture in India
Topics in African Anthropology
Physical Anthropology
Human Genetics
Language and Society
Economic Anthropology
Linguistic Anthropology: Phonemics
Linguistic Anthropology: Morphology and Syntax
Anthropology of Law
Primitive Art and Music
Primitive Religion
Personality and Society
Personality and Culture
Analysis of Kinship Systems
Anthropological Theory

Zoology:

Biology
Comparative Vertebrate Anatomy
Heredity and Eugenics
General Embryology
Principles of Ecology
Evolution
Introduction to Genetics
Ornithology
Human Evolution
Principles of Physiology
Animal Parasites
Animal Diversity
Animal Behavior
Marine Ecology
Experimental Genetics
Biological Oceanography
General Physical and Chemical Oceanography
Limnology
Oceanographic Techniques
Vertebrate Zoology
Experimental Embryology
Human Genetics
Systematic Zoology
Cytology
Topics in Cell Structure and Function
Radiation Biology
Physical Biology
Biological Nucleonics
Introductory Biochemistry
Physiological Ecology of Marine Animals
Comparative Physiology
Cellular Physiology
Invertebrate Zoology
Invertebrate Embryology

University Courses:

Comparative Politics: Western Europe
Social Impact and Response in the Developing World

School of Engineering:

Engineering Design
Statics
Introductory Electric Systems
Mechanics of Deformable Bodies
The Structure and Properties of Solids
Thermodynamics
Dynamics
Heat Transfer
Fluid Mechanics
Fields
Legal Aspects of Engineering
Patent Law for Engineers

Civil Engineering

Geodetic and Location Measurements
Plane Surveying
Transportation Engineering
Materials of Construction
Hydrology
Hydraulic Engineering
Sanitary Engineering
Sanitary Engineering Design
Structural Mechanics
Structural Design
Introduction to Soil Mechanics
Projects in Civil Engineering
Structural Engineering
Engineering Systems Analysis
Introduction to Engineering Mechanics
Exerimental Mechanics
Plates and Shells
Elasticity

Mechanical Behavior of Materials
Structural Materials
Incompressible Fluid Flow
Coastal and Tidal Hydraulics
Structural Engineering
Reinforced Concrete Design
Foundation Engineering
Earth Structures
Sanitary Engineering Unit Operations and Process Design
Engineering Analysis

Electrical Engineering

Electronics and Signals
Electromechanical Energy Conversion
Physical Electronics
Electromagnetic Fields and Waves
Design Colloquium
Pulse and Digital Electronics
Modulation Systems and Noise
Electronic Processes in Materials
Dynamics of Electromechanical Energy Conversion
Nuclear Engineering Fundamentals
Microwaves and Quantum Electronics
Linear Feedback Systems
Random Signals and Noise
Information Theory and Communication Systems
Signal Detection and Extraction Theory
Switching and Logic Networks
Solid State Theory
Solid State Materials
Principles of Magnetism
Semiconductor Physics
Masers
Nonlinear Analysis
Semiconductor Electronic Circuits
Network Synthesis
Linear Control Systems
Advanced Electric Energy Conversion
Electromagnetic Theory
Applications of Electromagnetic Theory

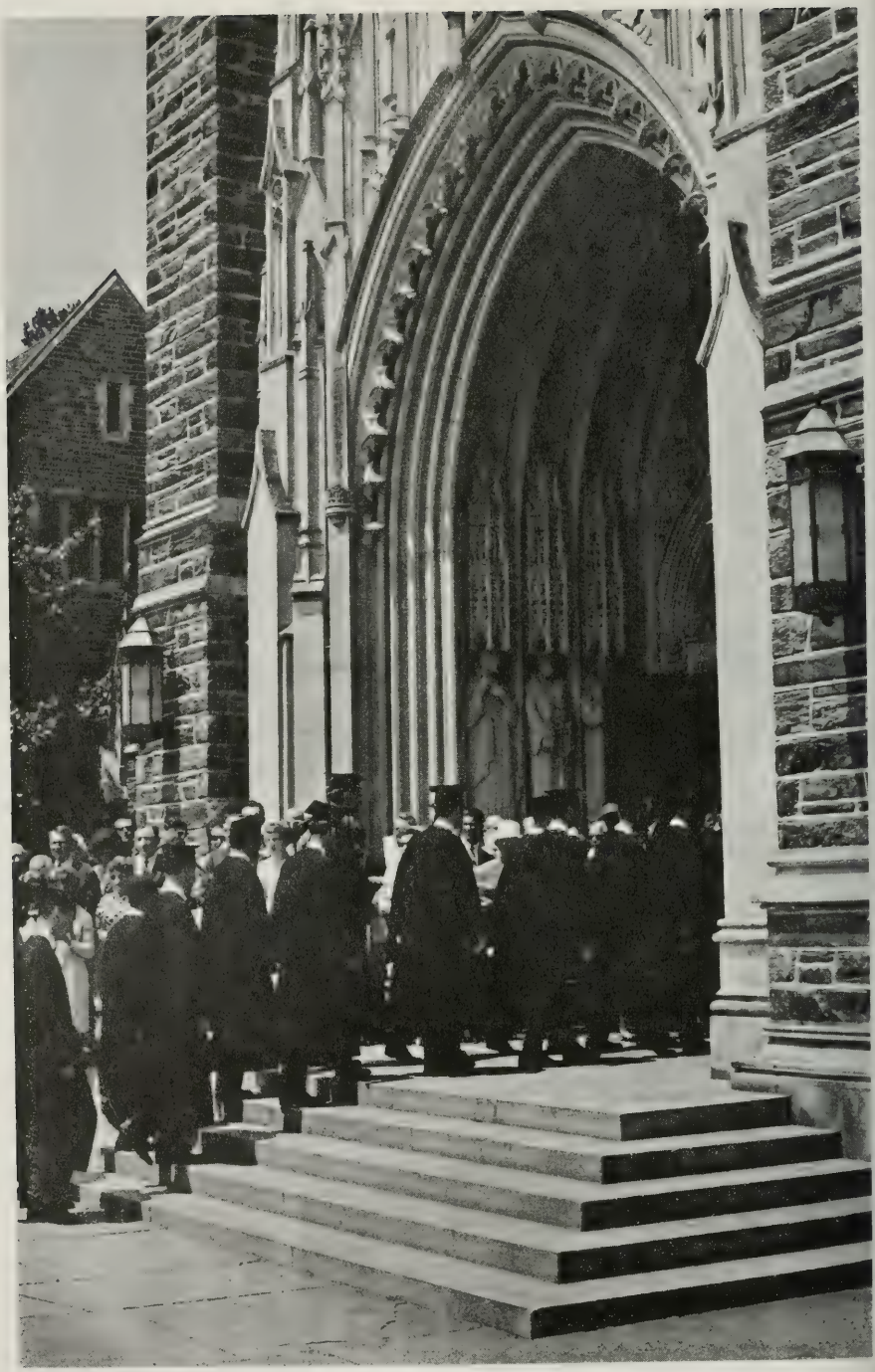
Mechanical Engineering

Thermodynamics II
Physical Metallurgy
Polymer Science
Transport Phenomena
Dynamics of Gases
Mechanical Design
Response of Systems
Heating, Air Conditioning, and Refrigeration
Combustion Engines
Mechanical Engineering Laboratory
Power Plants
Vibration Control
Industrial Engineering
Kinematics of Mechanisms
Computer Techniques for Simulation and Design
Fundamentals of Nuclear Engineering
Projects in Mechanical Engineering
Theoretical Thermodynamics
Introduction to Advanced Mechanics
Compressible Fluid Flow
Heat Transfer
Theoretical and Applied Polymer Science
Intermediate Fluid Mechanics
Systems Response and Control
Fluid Control Systems
Advanced Mechanical Vibrations
Refrigeration and Cryogenics
Energy Conversion
Theory of Lubrication and Bearing Design
Nuclear Reactor Power Cycles

School of Nursing:

Nursing and Nursing Related Sciences

Microbiology
Chemistry
Introduction to Biochemistry
Human Anatomy and Physiology
Normal and Therapeutic Nutrition
The Fundamentals of Nursing
Nursing of Children
Maternity Nursing
Medical-Surgical Nursing Theory
Medical-Surgical Nursing Practicum
Community Health and Social Forces
Social Foundation of Nursing
Psychiatric Nursing
Psychiatric Nursing Group Work
Public Health Science
Public Health Nursing
Team Leadership and Intensive Nursing Care





cademic Guide for Freshmen
1968

BULLETIN OF
)UKE UNIVERSITY

ACADEMIC CALENDAR FOR FRESHMEN

Materials for pre-registration mailed to freshmen (Appropriate *Bulletin* and *Academic Guide for Freshmen* with packet of registration cards.)	June 2 - 3
Preliminary Registration Cards returned by mail to the appropriate School Office	Prior to July 1
Freshman Week booklets mailed to freshmen	August 1 - 15
Freshman Week begins	September 13
Duke Placement Tests administered	September 13
Final Registration for freshmen	September 16
University Convocation	September 18
Fall semester classes begin	September 19
Advisory grade reports due from instructors for all freshmen	November 2
Pre-registration for the spring semester	November 11 - 14
Thanksgiving recess begins (12:30 P.M.)	November 27
Classes resume (8:10 A.M.)	December 2
Christmas recess begins (12:30 P.M.)	December 21
Classes resume (8:10 A.M.)	January 6, 1969
Final examination period	January 15 - 24
Spring semester classes begin	January 31
Advisory grade reports due from instructors	March 12
Spring recess begins (12:30 P.M.)	March 22
Classes resume (8:10 A.M.)	March 31
Pre-registration for fall semester, 1969	April 7 - 10
Final examination period	May 19 - 28

BULLETIN

OF

DUKE UNIVERSITY



ACADEMIC GUIDE FOR FRESHMEN IN THE UNDERGRADUATE COLLEGES AND SCHOOLS

TRINITY COLLEGE
THE WOMAN'S COLLEGE
THE SCHOOL OF ENGINEERING
THE SCHOOL OF NURSING

DURHAM, NORTH CAROLINA
1968

TABLE OF CONTENTS

Academic Calendar for Freshmen	Inside front cover
Introduction: The Freshman Year...and The Years Ahead	3
Preliminary Registration for First Semester	5
Suggested Programs for Freshmen	7
Placement in Advanced Courses, Advanced Placement Credit and Waiver of Uniform Course Requirements	8
Course Descriptions and Departmental Majors	11
A Suggested Reading List for The Summer	57
Registration Materials	Inside back cover

NOTE: 1. *The registration materials inserted in the pocket inside the back cover of this booklet REQUIRE ATTENTION PRIOR TO JULY 1.* By that time they should have been completed and returned in the envelope provided to the freshman office of the appropriate school or college.

2. Because of the relevance of this brochure to academic planning during the freshman year, be sure to place it with the items you will bring to the campus in September.

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INTRODUCTION: THE FRESHMAN YEAR. . . AND THE YEARS AHEAD

This booklet is designed to help freshmen entering the undergraduate colleges and schools to pre-register for the initial year with foresight and to plan thoughtfully for subsequent years. Included is information about courses open to all freshmen as well as special sections, tutorials, and upper-level courses into which freshmen are admitted through placement tests and interviews. Instructions and materials for preliminary registration (i.e., selection of courses for the fall semester) are provided, as is a list of books recommended for summer reading. Students are urged to study with care this *Academic Guide* and the official *Bulletin* of the undergraduate school or college in which they will be enrolled. Both the *Academic Guide* and the *Bulletin* should be brought to Duke in September for further reference.

In no way is this guide a blueprint for a college education; it forecasts, however, some of the academic opportunities. Numerous possibilities are open after the freshman year which this guide cannot cover. For example courses may be audited when a crowded schedule precludes their election for credit. An introductory course may be "read out" during the summer, thereby making it possible to move more quickly to advanced work. Special seminars, independent study, and original research are available in the junior and senior years. This guide cannot forecast the many informal educational experiences that are available in a residential college on a university campus. Each student determines the ways in which he utilizes forums, symposia, films, art exhibitions, plays, concerts, and student activities. There are countless opportunities to learn outside of the classroom.

The university provides guidance in course selection, career planning, and personal adjustment but, for the most part, each student must seek and arrange for it. If a student is unsure of a course selection or if he is having adjustment problems, he should arrange at once a meeting with an appropriate counselor. Each academic department has a supervisor of freshman instruction and/or a director of undergraduate studies whom students may consult concerning course work and careers relating to that discipline. Most faculty members welcome contacts with their students outside of as well as in the classroom. In each college or school, the dean concerned with freshman affairs is a source of guidance in both academic and extracurricular matters.

Entering college is not simply embarking on the road to a degree and a comfortable job; it is not dividing life from scholarship; it is not a guarantee of an education. There is promise, however, of new experiences. There is hope for the recognition of one's own potentials and shortcomings. Adventure lies ahead. The educational process does not always produce a feeling of happiness or security; it often disturbs beliefs. As the years progress, however, the student becomes the initiator instead of the initiated.

PRELIMINARY REGISTRATION FOR THE FALL SEMESTER

In the pocket inside the back cover of this booklet are cards to be used for the preliminary registration in courses for the fall semester; the cards must be completed and mailed ACCORDING TO INSTRUCTIONS ON THE FIRST CARD. This process of preliminary registration in no way precludes the opportunity for making changes in course selection during Freshman Week.

Before completing the Course Program card, read this entire booklet and refer to the *Bulletin of Undergraduate Instruction* (or of the *School of Nursing* or of the *School of Engineering*) for (1) a description of uniform course requirements for the Bachelor of Arts or the Bachelor of Science degree, (2) course load, (3) the work constituting a major in disciplines of interest, and (4) preparation for specialized programs and professional schools.

Suggested course programs for each undergraduate college and school follow. When the registration cards are received and departmental advisers have determined certain course placements, a tentative fall course schedule will be made for each student. The tentative course schedules are issued to students upon arrival on campus. Any student may modify his course schedule during Freshman Week by his own initiative or as a result of Duke placement tests and departmental counseling.

A student who has not yet found a field of greatest interest should select one or more courses that may be helpful in his later choice of a major field. It is important to avoid too much early specialization. Just as science majors are required to take liberal arts courses, majors in the humanities are required to take a formal and a natural science, although it is not necessary that these courses be taken in the freshman year.

In addition to regular courses open to all freshmen, there are three special types of course offerings. See departmental descriptions for details of content and regulations concerning eligibility.

1. *Special sections*, designated by the letter *X*, are offered in English, history, physics and sociology. These sections are limited in enrollment and thus give good opportunity for active discussion and participation by students. In general, special sections presume background information, strong interest and good ability. An interview with a departmental representative is necessary to validate eligibility in some special sections.

2. *Special courses*, designated by the numbers *41*, *42*, are offered in chemistry, mathematics and physics. (Courses numbered 41 are offered in the fall followed by 42 in the spring). Selection is based upon requirements determined by the respective department. (See departmental descriptions.) A qualifying test for Chemistry 41 is administered during Freshman Week. Special courses numbered 41, 42 are intended to cover the topics of introductory courses more extensively and rigorously.

3. *Tutorials*, designated by the numbers *43*, *44*, are designed to *accompany the introductory courses* in history, philosophy and religion. Each tutorial is limited to a small group of incoming freshmen selected usually on the basis of an interview with the prospective tutor. Two presuppositions underlie the tutorial system. (a) Independent investigation when properly directed is one of the most fruitful methods of evoking high quality scholarship. (b) A close working relationship between student and tutor in an informal atmosphere enables the student to gain an understanding of some of the subtleties of research. Credit of one semester hour is given for a tutorial each semester.

Students may find these one-hour tutorials useful to balance or round out their schedules and to satisfy the course-load requirement in credit hours. (Most of the courses carry three hours of credit. Introductory science courses and most introductory courses in foreign languages carry four hours of credit.)

Ordinarily a student should not elect more than one of the special opportunities described above. Each is demanding of time. Students are generally notified during the summer of their acceptance to special sections or courses unless qualifying tests or interviews are required during Freshman Week.

SUGGESTED PROGRAMS FOR FRESHMEN

The Woman's College and Trinity College*

Fall Semester		Spring Semester	
COURSE	SEMESTER HOURS	Course	Semester Hours
English	3	English	3
Foreign Language	4(or 3)	Foreign Language	4(or 3)
Laboratory or Formal Science	4(or 3)	Laboratory or Formal Science	4(or 3)
One or two others (requirements or electives)	3(or 6)	One or two others (requirements or electives)	3(or 6)
Physical Education	1	Physical Education	1
Total (minimum and maximum)	15-18	Total (minimum and maximum)	15-18

*For Woman's College and Trinity College freshmen, it is generally wise to include a foreign language, a laboratory or formal science and at least one other course that will satisfy a uniform course requirement. The student should note, however, that some upper-level courses satisfy university requirements for religion, social sciences and humanities. Since most of the upper-level courses may not be taken during the freshman year, a student may defer certain uniform course requirements to the sophomore or junior year. Students whose special interest is in the humanities or social sciences may wish to postpone the laboratory science to the second year. Pre-medical students will generally take Mathematics 21 (or higher course by Advanced Placement) and, in some cases, a second laboratory science course.

The School of Engineering

Fall Semester		Spring Semester	
COURSE	SEMESTER HOURS	Course	Semester Hours
Chemistry 1	4	Chemistry 2	4
Engineering 1	2	Engineering 2	2
English 1	3	English 2	3
Mathematics 51	3	Engineering 23	3
Mathematics 21	3	Mathematics 22	3
Physical Education 1	1	Physical Education 2	1
Total	†16	Total	†16

†Engineering students taking Air Science or Naval Science may need to schedule one course in Military Science in addition to the program listed here.

The School of Nursing

Freshmen in the School of Nursing select their programs from the following areas of study with guidance from the Director of Undergraduate Studies or an academic adviser from the faculty of the School of Nursing: English, Foreign Language, Mathematics, Social Science and History, Humanities, Religion, Natural Science, Physical Education.

PLACEMENT IN ADVANCED COURSES, ADVANCED PLACEMENT CREDIT AND WAIVER OF UNIFORM COURSE REQUIREMENTS

Advanced Courses are those above the freshman or introductory level. The incoming student is encouraged to seek advanced placement in those fields where he has the necessary background and can show evidence of proficiency. Placement in some courses requires proficiency in related fields, e.g., enrollment in Chemistry 1 and Physics 41 is contingent upon the student's eligibility for Mathematics 17 or 21. (This and other prerequisites for courses are listed with course descriptions.)

Advanced Placement credit is awarded for college-level work completed in high school. Awarding of credit is subject to the recommendation of the individual departments based upon Advanced Placement Program test scores only. College credit is not given for college courses completed before the date of secondary school graduation. Credit for Advanced Placement Program courses is granted by the Registrar upon matriculation or it may be deferred until validated by the successful completion of specified college work in residence. See paragraph 1 below.

The ***waiver of uniform course requirements*** may occur with Advanced Placement credit. This is subject to the recommendation of the department and the appropriate dean of the school or college.

Entering students may achieve placement in advanced courses through the three routes listed below. Advanced Placement credit and/or waiver of uniform course requirements, however, are achieved only via Route 1. Students will be notified of their placement during the summer or upon arrival unless tested under Route 3.

1. ***Advanced Placement Program (APP) Test Scores*** furnished by the College Entrance Examination Board (CEEB) are used by the Registrar and departmental advisers in determining advanced placement and advanced placement credit in biology (both botany and zoology), chemistry, English, French, German, history (both European and American), Latin, mathematics, physics, and Spanish (see pages 26 and 51 in *Bulletin of Undergraduate Instruction*).

2. ***CEEB Achievement Test Scores*** are used as basic criteria for placement in foreign languages and mathematics. Although place-

ment in advanced courses is determined by several criteria, the following information will help students to make reasonable requests for courses in the foreign languages and in mathematics.

FRENCH		GERMAN		SPANISH	
CEEB Achievement Scores	*Course Placement*	*CEEB Achievement Scores*	*Course Placement*	*CEEB Achievement Scores*	*Course Placement*
200–396	French 1*	200–365	German 1*	200–453	Spanish 1*
397–556	French 63	366–571	German 63	454–623	Spanish 63
557 plus	French 91	572 plus	Third year	624 plus	Spanish 91

LATIN		MATHEMATICS	
CEEB Achievement Scores	*Course Placement*	*CEEB Achievement Scores*	*Course Placement*
200–529	Latin 1*	430 or below	No Mathematics
530–639	Latin 63	431–529	Mathematics 21A
640 plus	Latin 91	530–739	Mathematics 17 or 21
		740 plus	Math 21, 41 or higher depending on previous training

*Unless special permission is granted by the appropriate department, the first year of a language may not be taken for credit by a student who offered for admission two units (i.e., two years, high school) of that language.

3. ***Placement Tests are administered by Duke University*** during Freshman Week for students who have not taken the CEEB Achievement Tests in foreign language but who wish to continue study in this area. Any student may challenge the validity of his CEEB test scores by submitting to these tests administered at Duke University. A chemistry qualifying test is also offered during Freshman Week for students who are given tentative placement in Chemistry 41.

Freshmen who anticipate taking placement tests are urged to review for them.

(a) ***The Mathematics Placement Test*** establishes whether a student is qualified for Mathematics 17, 21 or 41. Freshmen who believe they are eligible for placement beyond Mathematics 41 are invited to see the Supervisor of Freshman Instruction in that department early in Freshman Week.

Students who expect to enter economics, business administration or accounting, engineering, pre-medical or pre-dental programs, mathematics or science are advised to review their secondary school mathematics, particularly algebra (e.g., factoring, fractions, linear equations

in one, two and three unknowns, functions and graphs, exponents and radicals, and elements of quadratic equations) and trigonometry in order to qualify for Mathematics 21 or Mathematics 17.

(b) ***The Placement Tests in French, German, Latin, Russian and Spanish*** are of the CEEB type with two distinct parts: (1) a section on reading comprehension, and (2) a test of basic grammar. Students may prepare for the first part by extensive practice in rapid reading with emphasis on general comprehension rather than translation. Preparation for the second part should include a review of basic grammar with particular attention to verb forms.

Students entering Trinity College or The Woman's College have the option of continuing work in a foreign language at the assigned placement level or beginning another language at the elementary level. Students assigned to a foreign language course numbered 91, 92 who have confidence in their ability to understand the spoken language (not applicable to Latin) are urged to discuss with the appropriate Director of Undergraduate Studies the possibility of placement in a course at the 100-level.

Science majors pursuing a B.S. degree must select two foreign languages from among those acceptable to the departments in which they major. Ordinarily these languages are French, German, and Russian. Science majors studying for the A.B. degree must offer one foreign language of their own choosing, although the science departments at Duke prefer that French, German, or Russian be studied.

Pre-medical students must satisfy the foreign language requirements of the degree programs they intend to pursue, whether B.S. or B.A. Medical schools requiring or recommending that foreign language be studied in college as a condition of admission ordinarily will accept any modern foreign language, and some will accept a classical language.

(c) ***The Chemistry Qualifying Test*** is mandatory for all students given tentative placement in Chemistry 41 or above. These students are advised to review the periodic table, properties of gases, chemical reactions, problems based on chemical equations (if mole method was used), and atomic and molecular structure.

Finally, inasmuch as a physical performance test (see Physical Education, pages 41 and 42) is administered at the inception of the fall semester, the student is well advised to condition himself for this activity prior to Freshman Week.

COURSE DESCRIPTIONS AND DEPARTMENTAL MAJORS

The following expanded descriptions of courses open to freshmen will prove useful, in conjunction with the material in the appropriate *Bulletin,* in the preparation of trial course programs for the freshman year. The *Bulletin* of each of the four undergraduate schools and colleges provides a statement of the rationale of the undergraduate curriculum, a description of requirements for degrees and majors, and a complete listing of undergraduate courses. Courses numbered 50 or above are open to first semester freshmen only via advanced placement.* Accompanying the course statements are descriptions of the programs of concentration (or majors) available through the various departments. Each department offers one or more majors in which a student may specialize and bring his interests to focus.

The earliest opportunity to declare a major and be formally advised by a faculty member in the department of choice occurs in March. From the outset, however, informal advice may be sought from the Supervisor of Freshman Instruction and/or the Director of Undergraduate Studies in the appropriate department. These officers are designated by name in the undergraduate *Bulletin.* All students will be asked to choose a major no later than the spring semester of their sophomore year.

*Exceptions are Art 51, Economics 59, English 51, Geology 53, Mathematics 51 and Sociology 91, which are open to first semester freshmen. Psychology 91 is open in the spring semester to freshmen.

AIR FORCE AEROSPACE STUDIES

(Trinity College and the School of Engineering)
Aerospace Studies 2 (Fall)
World Military Systems

Freshmen desiring to compete for a commission in the Air Force while earning their degree should contact the Air Force Department of Aerospace Studies during Freshman Week. A few moments of the student's time will determine whether or not he has the basic requirements necessary to enroll in the program.

Students enrolling in the four-year AFROTC plan who have not already received the Financial Assistance Grant are eligible to compete for the Air Force Financial Assistance Grant program. This program includes full tuition, books, laboratory fees, and fifty dollars per month subsistence pay. There is no increased service obligation involved in accepting this grant.

All cadets who are qualified for and interested in pilot training will participate in the flight instruction program in their senior year. This program involves a two-semester hour academic course and a flying course that qualifies the student for a private pilot certificate.

For the freshman, the AFROTC program involves a two-semester course (Aerospace Studies 2) which is an introduction to world military/political relationships and the composition of the U.S. Air Force. The student must take AS 2 in the fall semester of his freshman year. He may take the two-semester hour sophomore course (AS 51) in the spring semester of either the freshman or sophomore year. He must participate in the one hour per week Corps Training period each semester that he is a member of the ROTC. This period meets each Monday, 4:00 P.M. to 5:00 P.M., throughout the normal school year.

ANTHROPOLOGY

(See Sociology and Anthropology)

ART

Art 51 (Fall), 52 (Spring), Introduction to Art History

Art 51-52 serves as a general introduction to studies in archaeology, art history, and criticism. Emphasis is placed on the chronological development of architecture, sculpture, painting, and minor arts as

material manifestations of culture of Western man from ancient to modern times. In addition to revealing cultural history, the course introduces the student to principles and terminology related to form, materials, and techniques in the visual arts and develops within the student some insight for critical judgment and discrimination of works of art. Although Art 51-52 is not prerequisite to upper-level courses, the orientation it provides is helpful in further art studies.

Art 53 (Fall), 54 (Spring), Beginning Studio

Art 53-54 is a beginning studio course with primary emphasis on drawing. It is prerequisite to further courses in painting or printmaking and may be taken by freshmen only by consent of the instructor on evidence of previous work. It requires three afternoons per week. Equal hours in art history or theory are required to validate studio credit but these need not be concurrent.

The Major in Art

The field of art embraces two areas—the practice of art and art history—which represent different, but not mutually exclusive, avenues for the acquisition of knowledge and experience in the visual arts.

Courses in the practice of art serve the purposes of a liberal education because they are concerned with basic skills in drawing, painting, and printmaking through which a student may gain sufficient experience to realize his interests and aptitudes. The program at Duke does not offer professional training in specific skills, but a talented student may enter a graduate or professional school and expect to accomplish professional objectives within a three year period of concentration.

Art history is a relatively new member of the academic family of humanistic studies which was formalized only in the early part of this century. The concept of "art history" belongs, however, to the 18th century when J. J. Winckelmann first perceived the value of interpreting works of art as human data to reconstruct the social, religious, cultural, and intellectual climate within which man lives at a particular moment of history. The popular notion of "appreciation," as such, is not a function of art history. As an academic discipline art history is first of all an aspect of cultural history and merges further with other humanistic areas, such as philosophy, religion, and literature. By the nature of its research methods and documentary sources it presupposes a concurrent development in language tools.

The two courses which will define for the beginning student the fields of art history and studio work are described above.

The student selecting art as his major will elect either art history or design for concentration. In design he will follow a prescribed sequence of courses designed to lead him from basic problems in

drawing and design to the art of painting and graphics. In the history of art he will effect a chronological spread of area courses and select one area for specialization.

The Department offers an honors program in art history which leads the superior student into independent study and research as a prelude to graduate study in the field. Special lectures, traveling exhibitions, and art films are arranged by the department or the Duke University Student Union, and field trips are arranged in connection with art history and studio classes from time to time.

BIOLOGY

Biology 1 (Fall), 2 (Spring), General Biology

This course is taught on a collaborative basis by the Departments of Botany and Zoology as an introduction to biology both for students who have had some contact with biology and those who have not. In it the principles underlying the functional structure of plants and animals will be emphasized.

The surveys of plant and animal diversity in this introductory course in biology are linked by their common elements: structure and function of cells; replication of heredity material; differentiation of cells; geological history of the biota; composition and interrelationships of communities. While stress is placed on appropriate plant and animal materials in the course to illustrate prime biological principles, the organization of lectures, laboratories and discussions is such that the uniqueness of the plant and animal groups is retained.

The principles developed in lecture are illustrated in the laboratory exercises. Important relationships of the other natural sciences and mathematics to plant and animal biology are explored and evaluated since advances in chemistry, physics, mathematics and biochemistry have made clearer certain biological principles common to all organisms. Although a precise understanding of plants and animals is obviously important, it is equally necessary that the student recognize unsolved problems or controversial issues in biology. The student is accordingly encouraged to develop the ability to perceive, to interpret experimental data, and to draw conclusions.

NOTE

General Biology serves as the introductory course in both the Departments of Botany and Zoology and is prerequisite to advanced studies in either. The student interested in concentration in biology is directed to the materials described under the Botany and Zoology Departments. Duke does not have a biology department or a biology major program as such.

BOTANY

The introductory course is described above under Biology.*

The Major in Botany

As a fundamental division of biology, the plant sciences have a significant role in developing both the modern aspects of biological knowledge and continuing the basic disciplines of classification and structure. The Department's curriculum for undergraduates thus seeks to provide the major with the theory, the laboratory and field training that will develop a broad working mastery of biological principals and be the foundation for advanced work.

Although botany is concerned traditionally with plant structure and function, this concern does not reflect the full province of the Department's undergraduate curriculum. Following the introductory biology course, a student majoring in botany is expected to select courses in four of the following basic fields: anatomy, ecology, heredity, morphology, physiology, or taxonomy. Later he has a wide latitude of choice in courses offered by the Department and other science departments. Since the breadth of possibilities is great, the major who discovers his particular interests early may best be directed into a curriculum which will prepare him for advanced studies in biochemical or molecular plant or animal biology, marine biology or biological oceanography, or college or secondary school teaching, and many others. Advanced courses in the natural and physical sciences may be counted toward the major.

The undergraduate major does not concentrate in a particular field of the plant sciences. With the recent advances in biology coming from techniques and concepts developed around plant materials, and the need for a broad basic knowledge of fundamental plant disciplines, the modern botanist must have a degree of competence in and an understanding of the whole field of plant biology and its contributing disciplines.

Recognizing its responsibilities in providing students with the opportunity to explore plant biology through the medium of independent study and research, the Department of Botany subscribes to a liberal program of training not directly connected with formal course work. The Department provides some financial support allocated specifically for undergraduate independent study in a program aimed at enrichment rather than acceleration. The work often carries credit and may involve study at other institutions or in territories outside the United States. Qualified students are often selected as participants in faculty research on campus or at the Marine Laboratory. Whether or not one qualifies for the departmental hon-

*Entering students with unusual secondary school preparation in biology, e.g., two or more units of biology or attendance at an NSF Summer Institute, may qualify for advanced courses in botany. These students should seek an interview with the Director of Undergraduate Students in Botany during Freshman week. Students with scores of 4 or 5 on the CEEB Advanced Placement Program Tests may elect advanced placement in botany.

ors work or graduation with distinction, the major in botany with its biological implications should prepare the dedicated and willing student for later occupations in industry, education or a combination of research and academic pursuits.

BUSINESS ADMINISTRATION

Business Administration 59 (Spring), Principles of Accounting I

Business Administration 59 is designed to provide an introduction to both the general structure of accounting and the data requirements for planning and control within organizations.

Economics 52 is required for a major in business administration and should be taken before or with Business Administration 59.

The Major in Business Administration

The Business Administration curriculum provides two plans for the major. One is the business administration option, with emphasis on a broad consideration of the managerial process and the associated social problems. The other is the accounting option, with emphasis more toward professional preparation in the field of accounting.

The major in business administration is one of several proper preparations for students who desire a career in business, or who desire to enter a graduate school of business, a law school, or a hospital or public administration program. Students in business administration who plan to attend graduate school should plan their undergraduate work carefully in order to include a good combination of mathematics, and economics and other social sciences.

Work leading to Graduation with Distinction is available for majors in the Department.

CHEMISTRY

Chemistry 1 (Fall), 2 (Spring), General Inorganic Chemistry

The first semester is devoted to a consideration of the principles of chemical science. The properties of matter—gas behavior, solution phenomena, quantitative aspects of chemical reactions, chemical equilibrium—are related to the molecular structure of matter and further to the structure of the atoms themselves. The quantitative aspects of the principles are discussed extensively and, in the laboratory, experiments illustrating these principles are carried out.

In the second semester a systematic study of the chemistry of the elements is supplemented by laboratory exercises in the qualitative analysis of some twenty common ions by semimicro techniques. An introduction to organic chemistry stressing structural isomerism and functional groups is also included.

While these courses serve as prerequisites for subsequent courses in the Department, they also provide for the non-science major an experience of some depth in the method, concept, and problems of a broadly based scientific discipline.

Chemistry 41 (Fall), 42 (Spring), Advanced General Chemistry

For able freshmen with extensive secondary school preparation in chemistry and physics the Department offers a special course. In the first semester attention is given to the states of matter, atomic and molecular structure, chemical bonding, and equilibrium.

In the laboratory, experiments illustrating the qualitative aspects of chemical principles are carried out. A group of 24 students, selected during Freshman Week, devote a major portion of the semester to independent investigations. In this work students are asked to formulate hypotheses to explain the behavior of simple systems and to devise and carry out experiments to test their hypotheses.

In Chemistry 42 emphasis is given to acid-base theory, ionic equilibrium in solution, kinetics, and elementary thermodynamics.

The laboratory in the second semester applies volumetric, gravimetric, colorimetric, chromatographic and instrumental procedures to problems in quantitative chemistry and the determination of physical constants.

Placement in the course is predicated upon an intended science or mathematics major, SAT verbal and mathematical scores, usually above 650, and a score of 650 or above on the CEEB Chemistry Achievement test, if it has been taken. Those students presenting scores of 4 or 5 on the Advanced Placement Program chemistry examination are normally given placement in Chemistry 61, Physical Chemistry or Aqueous Solutions. Those offering a score of 3 become candidates for Chemistry 41.

All students given placement in Chemistry 41 in the summer are expected to take a qualifying test for the special laboratory during Freshman Week. At that time there will also be an opportunity for those placed in Chemistry 41 by the Department to discuss the course with the instructor and indicate whether they wish to participate.

The Major in Chemistry

Chemistry is defined as the science of substances and is concerned traditionally with structure, properties, and the nature of reactions which change one substance into another; yet this definition fails to suggest the full province of the science. Because of the breadth of concern of chemistry—its relation to physics and the engineering and life sciences—chemistry is also a central figure in a significant, exciting, technological and scientific revolution now gaining momentum.

In the field of chemistry, whether one's interest is in the basic or applied science, he will pursue his study at one time on the macroscopic level where "bulk" phenomena involving perhaps 10^{20} molecules are observed, and at another time on the submicroscopic level where the intimate course of reactions between individual molecules is deduced.

The program for the chemistry major is designed to give a basic understanding of the fundamental principles of chemical science and a practical knowledge of common laboratory techniques and experimental procedures. The curriculum for the Bachelor of Science degree, approved by the Committee on Professional Training of the American Chemical Society, gives intensive training in chemistry and the related disciplines of physics and mathematics, while in the curriculum for the Bachelor of Arts degree, somewhat less than half a student's time is devoted to his major and related work.

The following sequence of courses is common to both major programs. *General Chemistry* emphasizes the general theory and behavior of matter in bulk and the structure, properties, and reactions of many elements and compounds. The Periodic Table and the chemical bond are stressed. *Organic Chemistry* describes the synthetic methods, systematic behavior, and the geometry of individual compounds of carbon as well as some of the theory involved. *Physical Chemistry* offers a critical, rigorous examination of the principles underlying all areas of chemistry including the states of matter, quantum phenomena, thermodynamics, and a thorough treatment of chemical kinetics. *Analytical Chemistry* treats in depth the theory of solutions and includes instrumental methods, such as spectrophotometric, electro-analytical, and chromatographic techniques. *Inorganic Chemistry* applies the principles of physical chemistry to a study of inorganic systems.

Depending on the type of degree and a professional interest, a student also pursues advanced work in one or more of the following areas: inorganic chemistry, qualitative organic analysis, nuclear chemistry, chemical instrumentation, organic preparations, and physical-organic chemistry.

The Department of Chemistry recognizes its responsibility to those students whose secondary school preparation has been exceptional and whose ability has been clearly demonstrated. For these gifted students, the Department offers a different and challenging curriculum during the first year aimed at enrichment rather than acceleration. During the second year, these students are taught in special recitation and laboratory sections of the regular course; in the senior year they may pursue independent study and research in the Graduation with Distinction program.

CLASSICAL STUDIES

Greek 1 (Fall), 2 (Spring), Elementary Greek

The purpose of this course in the elements of Classical Greek is to provide a foundation for developing the ability to read Attic prose,

and at the same time to give the beginning student an introduction to the importance of the achievements of the ancient Greeks and their contributions to modern civilization. The most common vocabulary and idioms in Greek are studied, and emphasis is placed on the syntactical usages most frequently encountered in Greek authors. To lend vitality to the study of grammar, selected passages from many notable Greek writers are read and analyzed.

Classical Studies 15 (Spring) Mythology
(not offered in 1968-69)

The student is introduced to the subject by an analysis of the content of Greek myths, with attention to their sources and types. As man's imaginative response to facts of his experience in physical, social, and historical contexts, myth formed the seed of inspiration for the greatest works of Hellenic art and literature. A study of Greek mythology will help to explain its continuing power to stimulate more recent artists and poets. Classical Studies 15 is offered primarily to freshmen, and no knowledge of the Greek language is required.

Latin 1 (Fall), 2 (Spring), Elementary Latin
Latin 63 (Fall) Cicero's Orations, 64 (Spring) Vergil's Aeneid
Latin 91 (Fall), 92 (Spring), Latin Prose and Poetry

The beginning course provides the fundamental grammar and, toward the end of the year, the reading of easy prose. In Latin 63, 64, the student will read some of Cicero's orations and part of Vergil's *Aeneid.* If he begins with 91-92, he will find himself reading selections from great prose writers, such as Livy and Sallust, as well as the poetry of Catullus and Horace. The aim in these two courses is to introduce the student to masterpieces of one of the world's greatest literatures, and to develop and promote a capacity to read Latin with understanding, appreciation, and enjoyment, as well as to provide a firm basis for future study of the Roman achievement.

The Major in Greek

While the major in Greek is concerned primarily with the language and literature of ancient Greece, the student will be encouraged to take work in the disciplines of ancient history, Greek and Roman archaeology, linguistics, and the various other disciplines that together constitute "Classical Studies". Following Elementary Greek, the second year course is devoted to continuous reading of Greek prose and poetry, and to review of grammar and vocabulary. In the first term, several of the shorter Platonic dialogues are read, such as *Ion,* the *Apology* and *Crito,* with a view towards developing a facility in reading Greek prose and an appreciation of the importance of Socrates in the history of Greek thought. The second semester is devoted to a study of several plays of Euripides, including the

Alcestis, as an introduction to the problems of reading and interpreting Greek poetry in general, and the drama of Euripides in particular.

On completion of second-year Greek, the student may choose from a variety of offerings intended to provide an introduction to the epic and lyric poets, the writers of comedy and tragedy, and the historians and orators. In addition, work is offered in Greek prose composition, Greek history, and Greek art and archaeology. In the first of these courses, the student will find in his first efforts at imitating the prose styles of the masters of Attic prose one of the most effective means of refining his appreciation for the Greek language as an instrument of great subtlety and beauty for the communication of thought; in the second, emphasis is placed upon the basic historical processes which lay behind the development of Greek civilization from the Bronze Age to the Macedonian conquest; and in the third, an attempt is made to convey some appreciation of the achievement of the Greeks in each phase of their art, as well as an understanding of the archaeological methods involved in reconstructing the development not only of ancient art but also, where literary evidence fails, of ancient history as well.

In his senior year, the Greek major will be expected to select two semester courses devoted to a more intensive study of the great individual figures in Greek literature, such as Homer, Aeschylus, and Plato, and he may also elect as related work advanced courses in Greek history and archaeology.

The Major in Latin

The major program in Latin involves the study of works of Latin authors, commencing with the "third-year" courses in Latin prose and poetry. Lower-level courses, primarily in the mechanics of the language and the development of reading ability, are taught with the purpose of eliminating, to the greatest possible extent, the obstacle of a language which is not our own. The invention of writing gave to language, and the thought which it conveys, a life which the spoken word loses in the moment of speaking. A language "lives" then, not only in present utterance, but also wherever in reading it constitutes a bridge of communication. Latin is not generally in current spoken use, but a knowledge of the language, as the medium of expression, is prerequisite to full and satisfactory comprehension of the thought and literary achievement of the Romans as captured in their writing.

While it is certainly true that a command of Latin is beneficial to the speaker and reader of English, and while it may be that the discipline of the language is valuable in other application, the major importance of Latin lies in its use, as the instrument of expression, by some of the earliest, and still notable, thinkers of mankind. Western civilization draws its beginnings and early development from the ancients, and in the widespread sharing of their influence

it has its principal bond of unity. Artists, philosophers, and men of letters have continually returned to this source and foundation; and the reëstablishment of communication with the ancients and their creations was the birth of that Reawakening which was to be a parent of the modern world.

The major program leads into intimate acquaintance with several of the great literary monuments and their authors, among them the incomparable prose styles of Cicero in philosophy and rhetoric, of Tacitus in historiography; the powerful, mordant satire of Juvenal; the astonishingly modern scientific thought of Lucretius.

Majors in Greek or Latin will be expected to take at least six hours in the other language, not only because a knowledge of both is a necessity for advanced work in Classical Studies at the graduate level, or because of the virtual coalescence of the two cultures during the Roman empire, but also because each tradition helps to illuminate the other, and to enrich one's knowledge of civilizations which we have come to regard as "classical"—that is, as inevitable norms or points of reference for understanding and evaluation of our own standards, aims, and needs. As education, these studies, like those of other great literatures, philosophy, or fine arts, are a substantial contribution to the individual's cultural development and personal enrichment. And as training they are by no means to be despised or ignored at a time when the spokesmen for industry, business and the professions with unanimous accord continually emphasize to their prospective recruits the virtues and values preëminently of education in the liberal arts.

In addition to their normal curriculum on campus, majors in Greek and Latin are eligible for nomination to a term of one semester during their junior year at the Intercollegiate Center for Classical Studies in Rome, of which Duke University is a founding member, at a cost comparable to that of a semester at Duke. At the Center, while the student pursues for credit courses in classical studies similar to those at home, he is also given a chance to familiarize himself at first hand with some of the greatest monuments of antiquity, both in Rome and in Italy and the Greek world generally.

ECONOMICS

Economics 1 (Fall), 2 (Spring) Introduction to Economic Problems and Policies and the Evolution of Economic Ideas

Economics 1 aims to give the student an understanding of the present-day American economy and the challenge to it from centrally planned economies. It considers alternative policies for dealing with problems of depression, inflation, and growth.

Economics 2 is a study of man's economic activities and economic thought from the ancient world to the present. Emphasis is given to the historical roots of today's economic ideologies.

The Major in Economics

The courses of study comprising the economics curriculum have been designed with an awareness of the liberal arts tradition to which the University is committed. The Department feels strongly that its mission is not to train students for their first job after graduation but to instill those qualities of mind which will fit them for the responsibilities that will arise in their careers. Experience over the years has indicated that prospective employers prefer the broader background.

The major in economics focuses on the economic process-past, present and future. Knowledge of this process is an important part of a liberal arts education. How society decides what to produce, how to produce, and who will enjoy the fruits of production in large part determines the nature of society—philosophically, socially and politically.

The major in economics is concerned with the economic process from a conceptual and analytical point of view; it is especially recommended for those who intend to go on to graduate work in economics. It also provides an excellent background for students who intend to study in other social sciences, law, or history.

In the senior year, majors in the Department may pursue independent study leading to Graduation with Distinction.

EDUCATION

The Majors in Education

The main purpose of the Department of Education is to provide professional preparation for teachers and other personnel for the schools. For this reason the courses offered by the Department are of primary interest to students who intend to teach or to serve in other capacities in schools. Such courses deal with principles and materials of instruction and their application to the classroom. However, the Department offers several courses in the area of liberal education which will help in developing a better understanding of people and society. The courses in social and psychological foundations of education are in this category.

At the undergraduate level, Duke University prepares teachers for both elementary and secondary schools. *Prospective elementary-school teachers major in elementary education,* since in this way they may best meet the dual requirements of gaining knowledge and skill in all of the areas taught in elementary school and acquiring an understanding of child development and learning theory. The University prepares teachers for the secondary schools in the fields of art, English, foreign languages, physical education (women), mathematics, music, the sciences, and the social studies. *Prospective secondary-school teachers major in the academic department of their principal interest* and should choose related work which will stengthen their preparation for a teaching career. There is a special program

and *a major in sicence education* designed to provide a broad background in the sciences and mathematics.

Introductory Psychology, Psychology 91, is prerequisite to all programs in teacher education. This course provides an opportunity to develop a background for understanding the behavior of children and adolescents. It should be taken in the sophomore year. Social Foundations of American Education or the History of American Education is also required for all undergraduate programs in teacher education. They are intended to acquaint prospective teachers with underlying viewpoints, problems, and issues of education. They should be taken in the junior year.

Students preparing to teach devote an entire semester of their senior year to courses in designated subject matter and professional education, and to student teaching. During the last half of this semester they are engaged in full-time observation and student teaching in schools.

Advisers in the Department of Education will help in planning a program that will serve individual student needs. For example, each student's program must be designed to meet the requirements of the state or states in which he desires certification. Students may also be helped by their adviser to work toward a decision as to whether or not they should teach and, if so, what subject or grade.

Anyone planning to teach who majors in another department should *make an appointment with a Department of Education adviser prior to each registration period* for the proper planning of his program. Such a contact will insure that a place will be available in the student teaching program in the senior year.

In the senior year, majors may pursue work leading to Graduation with Distinction.

ENGINEERING STUDIES

(School of Engineering)

Engineering 1 (Fall), 2 (Spring), Engineering Design; Engineering 23 (Spring) Statics

The first two courses introduce the student to engineering through the solution of selected problems of design with the aid of the tools of engineering graphics—an important form of communication and a means for visualizing solutions. The problems which are chosen represent real engineering needs, hence the student is given the opportunity not only to draw upon his existing knowledge but is stimulated to acquire new knowledge in the process of proposing and developing his solutions.

In the second semester the problems are larger in scope than those of the first semester and involve larger design teams, the inclusion of economic considerations, and attention to ultimate feasibility. Graphical analysis is extended and includes elementary nomography and the development of graphical calculus. An introduction to the digital computer is provided.

The third course, statics, deals with the analysis of forces and their equilibrium as applied to machines and structures and other engineering components and systems which must be designed to sustain applied loads. The principles of statics are basic to the analytical description of many engineering problems and set the stage for more advanced studies that follow. Included in statics are descriptions of the effects of friction, the stability of various structures, and the equilibrium of forces which are internal to and distributed throughout a body.

Majors in Engineering Studies

The ultimate purpose of engineering is to bring into being new devices, machines, processes, and structures, which contribute progressively to the development of civilization, and to do so at minimum cost in time and money. Central to this concept of engineering is that of creativity.

The unique contribution of the professional engineer, that of feasible and creative design, revolves around the effective putting together, or synthesis, of ideas and information relevant to the problem at hand. Characteristics of the engineering process are uniqueness or improved function, best possible use of people and materials, and practicality. Essential to the successful fulfillment of the engineering function are an adequate knowledge of both existing and new scientific information, an ability to combine this information effectively, an understanding of production processes and fabrication methods, and the exercise of professional responsibility for the welfare and protection of people.

Whereas engineers as individuals may perform specialized services within the total science-technology spectrum, it is the feasible, creative design concept which provides purpose, perspective, and incentive in engineering activity. Research and development, management, production, sales and services, and teaching are all important engineering activities as they occupy supporting roles to the central *creative* purpose of engineering.

It is essential to distinguish the aims of engineering from those of science. While these fields are closely interdependent, their objectives are fundamentally different. Science is involved in the *quest* for knowledge, engineering in its *use*. The scientist seeks to understand and describe clearly and rigorously the laws which govern the behavior of the physical world. In contrast, the engineer seeks to devise a practical solution to a human need and must make many compromises and judgments of value in doing so. His use of science and mathematics is an important means to this end.

The dependency of engineering on mathematics and science has increased greatly in recent years and promises to continue to grow. For this reason the engineer needs a strong background in mathematics and science.

The educational program in engineering at Duke is directed toward the following objectives:

a. To produce engineers who are equipped to function at the highest professional level, not only today, but for several decades, regardless of the scientific advances that the future may bring.

b. To produce engineers who can function intelligently within the economic and social framework of our culture—persons who are able to look from the past through the present into the future in terms of material wants and needs, and who are able to organize the human effort and financial resources necessary to provide the machines, goods, structures, and services that will meet those needs and wants.

c. To produce engineers who recognize their responsibilities as citizens of their communities.

d. To produce engineers who seek to continue aesthetic, ethical, intellectual, and spiritual growth.

To meet the first objective, the program seeks to provide a fundamental understanding both of the *science* of engineering, which is based on mathematics and the physical sciences, and of the *art* of engineering, which depends on human imagination and judgment. This objective is served primarily by the required and elective courses in mathematics, chemistry, physics, and engineering. The last three objectives are served mainly by the required and elective courses in the humanities and the social studies. All four objectives are served by various aspects of the extra-curricular program, including those of the general university program.

A prime requirement for successful practice of engineering is the ability to communicate facts and ideas. The engineer must be able to listen and read and to speak and write with precision, clarity, and understanding. Consequently, certain courses designed to improve the ability to communicate are recommended, and effective graphical representation, writing, and speaking is expected in all course work.

The engineering curriculum leads to the degree of Bachelor of Science in Engineering following the completion of four years of study and provides opportunity for majors in the professional fields of civil, electrical, and mechanical engineering, as well as for programs in interdisciplinary fields.

A program of honors work leading to Graduation with Distinction is available in any of the majors in the senior year.

The fields of civil, electrical, and mechanical engineering are briefly described in the paragraphs which follow.

Civil Engineering

Civil engineering is the profession technically concerned with solutions to problems resulting from man's increasing demands upon and the earth's limited resources of water, air and land. Work done by civil engineers is usually of large scale requiring initiative, vision and good judgment as well as adequate preparation in technical subjects. Civil engineers plan, design, construct, operate, maintain and manage individual or systems of constructed facilities such as dams, aqueducts, tunnels, reservoirs, highways, bridges, pipelines, railroads, drainage systems, buildings, airports and collection and treatment systems for industrial and municipal wastes. Because the accomplishment of their underlying purpose is more basic than facilities alone, civil engineers frequently work closely with other engineers, architects, biologists, chemists, economists and other professionals. Excellent opportunities for private practice, employment by industry, as well as government at all levels and the potential for combining other interests such as business and law motivate many who select civil engineering as a career.

Electrical Engineering

Electrical engineering utilizes the electric and magnetic forces of nature and the properties of matter to supply human needs. Because electricity is the most flexible form of energy available to man, electrical engineering influences the lives of most of the world's population. This profession is concerned with the *processing and transmitting of information*—as in television, radar, radio, electronic measurement, and computation. It is equally concerned with the *processing, transmitting, and controlling of energy*—as in rotating machines, power systems, and automatic industrial processes. It provides most of our labor-saving home appliances and many of the instruments of scientific research and modern medical practice.

Mechanical Engineering

The mechanical engineer is concerned with the design and fabrication of machines for the production of useful energy or the processing of materials. He must lead in the development of new sources of power, propulsion, and transport. Included are the familiar internal combustion engine, steam turbine, nuclear reactors, and jet engines in use today, as well as fuel cells, thermionic and thermoelectric energy conversion, magnetohydrodynamic power, ion and plasma engines and other new energy systems not yet known. The exploration of outer space and the depths of the oceans present challenging new problems. Further, there is the all important task of providing the technological requirements of an ever increasing population with its demands for new products in food, shelter, comfort, entertainment, and work saving devices.

The curriculum in mechanical engineering has been planned to bridge the gap between the basic sciences on the one hand and

the machine or process to be developed on the other. It is intended to prepare the individual particularly for a career in: 1) research and development; 2) design; 3) production, manufacturing and operation; and 4) management.

Interdisciplinary Major in Engineering

This major parallels the majors in civil, electrical, and mechanical engineering and, subject to faculty approval, is offered in selected areas such as biomedical engineering, engineering mechanics, energy conversion, materials, and systems and controls. Currently an approved program in biomedical engineering is offered.

ENGLISH

English 1 (Fall), 2 (Spring), Freshman Composition

In English 1, each freshman receives the advantages of three traditional modes of instruction: the formal lecture, the group discussion, and the private conference. At the beginning of each week, the student attends a formal lecture at which the general lecturer discusses the reading for the week, giving attention to its literary and rhetorical qualities. Later in the week, the student attends a meeting of his section (18 students). Here the section instructor directs a further discussion of the week's reading or talks about problems of composition which are pertinent to the class. At a prearranged time each week, the student meets with his instructor for a private tutorial conference. In this conference, the instructor reads, discusses, and grades the weekly theme, the topic of which derives from readings in prose fiction and non-fiction. Here the student is given the reasoning behind the instructor's evaluation of his theme and an opportunity to explain his own position and to find out ways of improving his work.

In English 2, in order to provide an opportunity for ampler discussion, sections will meet three times a week with occasional conferences and frequent writing assignments based as before on the readings. Each section will read works in one of these genres: Novel, Poetry, Drama, or Classical Epic. The freshman may apply for the subject that he wishes to study.

A student who has made a B— (or above) in English 1 may enroll in 55, 56, 57, or 58, in his second semester (concurrently with English 2); a student with advanced placement standing who has made a B— (or above) in English 55, 56, 57, or 58, may enroll in an advanced course in his second semester.

English 1x (Fall), Special Writing Section

There is one section of English 1 given for those who have shown a particular aptitude for descriptive and narrative prose and who wish to undergo a further rigorous training in these types of writing, taught by Mr. Reynolds Price. Final selection of students will be

made during Freshman Week. Ordinarily students in the Advanced Placement Program would not apply for this section. Those students who have taken the APP examination in English and who receive a score of 3 or higher may, however, apply for the special section or enroll in a sophomore course. If they are enrolled in the special section, they forfeit APP credit in English.

English 51 (Fall or Spring), Public Speaking

The ability to express oneself orally is a valuable asset to anyone and is a necessity for those going into the professions of law and the ministry. English 51 is designed to develop this skill and to give the student the poise and confidence necessary to think and speak freely before an audience. Particular attention is paid to the gathering and organization of materials.

The Major in English

The study of literature is, and will always be, one of the broadest avenues to a liberal education. It holds wide opportunities to approach and synthesize the whole length and breadth of human knowledge and to deal, directly or indirectly, with the great minds of the past and present. These are, essentially, very "practical" functions just as, at the other pole, to study literature is to gain insight into the very practical art of communicating through the written word. But perhaps most of man's conscious activity takes place neither on a high metaphysical plane nor on the level of the daily job; on the middle plane where he often lives and acts, literature holds the finest resource for understanding human character and all its complexities, for acquiring a sensitivity to the human condition and its workable values. Finally, everyone has to some degree an aesthetic drive: the study of literature gives it depth, direction, and rich satisfaction.

The student choosing a major in English concentrates in the study of English and American literature. The English Department has a varied program of offerings, and the major is required to satisfy a pattern of distribution rather than to take specific courses. As a result, the major will find his academic program marked by flexibility and individual responsibility. Usually he will be able to follow his preferences within a wide range of English and American literature and can also take two or more courses in some restricted area such as Elizabethan drama or nineteenth-century English literature or contemporary fiction, poetry, and drama.

The size and diversity of the Department also give him unusual freedom in the choice of his teachers. If he is wise, he will exploit the opportunity to select teachers who have differing approaches to literature and to classroom methods. He has, furthermore, a wide freedom in his program of related work, though he is helped in his planning by a faculty member who acts as his academic adviser.

Opportunities for creative expression are found in the *Archive* (the campus literary magazine), in the *Chronicle* (the newspaper), and in student groups devoted to speech, debate, and the drama. The Anne Flexner Memorial Award in Creative Writing is also given annually.

The Department poses some formal challenges to the more able student. In addition to the regular and traditional courses in literature, composition, speech, and drama, the English Department has instituted a number of upper-level "conference courses," limited to twelve students in each, for close study of various aspects of literature. A special Senior Seminar is offered majors who are candidates for Graduation with Distinction in English. This seminar stresses independent reading and the writing of a critical research paper. The Department also offers to every major in his senior year the opportunity to enter any among a dozen courses that are primarily designed for graduate students and that introduce him to a more technical and critical approach than he will usually meet in the conventional undergraduate program.

FRENCH

(See Romance Languages)

GEOLOGY

Geology 1 (Fall), 2 (Spring), Physical Geology; Historical Geology

Geology 1 and 2 offer a broad survey of the hard rock crust of the earth and its softer mantle of debris and soil on which life depends. The first course deals with the forces which build up, change, and destroy the accumulated formations that make mountains, underlie the sea bottom and ocean basins, and floor valleys—the forces of wind and weather, running water and moving ice—and the underground forces of volcanism and diastrophism. Lectures are supported by the examination of common minerals and rocks in the laboratory and by the study of topographic maps. In the second semester the broad aspects of the physical history of the earth and the evolution of life forms is studied. Basic principles used in reconstruction of the sequence of geologic events and the relative dating of these events is emphasized. The close interplay between the physical and biological history of the earth is stressed and possible causes and the significance of major trends and events is examined in terms of present day physio-chemical and biological processes.

The Major in Geology

Geology is the physical science concerned with the study of the earth. Some of the interests of geologists are the physical processes acting on the earth's surface (water, wind, ice), the composition of the earth (rocks and minerals), its structure (continents, ocean

basins, mountains), its economic products (oil, gravel, water, uranium), and its past history (origin, shifting positions of land and sea, kinds of life present).

Men and women versed in geology are utilized by federal and state governments and industry to help solve such varied problems as the location of petroleum deposits or the nature of the moon's surface. A considerable number of geologists are engaged in a wide spectrum of research in such specialties as oceanography, seismology, volcanology, and astrogeology.

The basic training of a geologist following the introductory survey courses is in four fields: (1) minerals (2) rocks (3) stratigraphy (4) structure. Additional courses depend in part on the specialization desired by the student. Basic training extends beyond geology alone and into other sciences: physics, chemistry, biology, and the mathematics. Fundamental principles and knowledge from all of these sciences is likely to be used in one specialty or another within the broad framework of geology. In some instances study in depth will be necessary within a related science for the student to be trained in a specialized field of geology. Thus the paleontologist must be trained in biology and the mineralogist in chemistry.

Undergraduates are encouraged to assist and in some cases to become junior partners in the various staff research activities.

GERMAN

German 1 (Fall), 2 (Spring), Elementary German
German 63 (Fall), 64 (Spring), Intermediate German
German 91 (Fall), 92 (Spring), Introduction to German Literature and certain 100 level courses for properly qualified freshmen

Elementary German obviously must concentrate on grammar and structural language tools, adding as much reading of illustrative material as time allows. Intermediate German, on the other hand, is chiefly concerned with reading (short stories, poems, etc.) combined with certain necessary grammar review. The facilities of the language laboratory are particularly designed for students in both of the first two years of German. Laboratory exercises are aimed at sharpening auditory comprehension, increasing fluency, and raising the general level of student language performance.

Freshmen entering The Woman's College who qualify for German 91 are eligible to apply for residence in the German Corridor in a dormitory on The Woman's College Campus. A small group of freshmen women will be admitted, along with members of the sophomore, junior and senior classes, to this living-learning corridor. A native German-speaking associate will be in residence. Any student interested in residence in the German Corridor is invited to correspond with the Dean of Instruction in The Woman's College, giving particulars of her qualifications.

The Major in German

Germany and German-speaking countries have contributed many men of genius in a wide variety of fields: poetry, the novel, philosophy, music, medicine, psychology, and most of the natural sciences. A study of the German language is obviously a desirable and even required tool for access to their achievements in these varied areas. A firsthand acquaintance with the German language, with the literature and social background of the Germanic countries, is therefore valuable and, in some cases, indispensable both to the future specialist and to the well rounded liberal arts student. Germany, even though divided, is still a major state of central Europe. Knowledge of its language, culture, and civilization is essential for knowledge of the history and culture of modern Europe, and of Western civilization.

A German major is required to take eight semester courses in the Department beyond the intermediate level. In the earliest stages of study, language-laboratory facilities are of valuable assistance. The German major is also asked to choose several courses among the various huminities, i.e., other literature courses, including English or American or Comparative Literature, French, Spanish or Russian literature as well as suitable courses in philosophy, history, religion, and linguistics. Study in these areas rounds out a liberal education.

The aim of the Department is to place language and literature study within the framework of Germanic civilization and European culture in general. The poets and writers of world influence (Goethe, Schiller, Hölderlin, Heine, and the modern figures of Rilke, Thomas Mann and Hermann Hesse) are seen against the background of great musicians of Austrian and German birth (Bach, Mozart, Beethoven, Schubert, Schumann, Brahms) as well as the achievements of their greatest, most influential thinkers (Kant, Schopenhauer, Nietzsche).

What are the benefits of such a major? The purely cultural benefits cannot easily be summarized. Just as Goethe and Kant, Nietzsche, Mann, and Rilke have made significant contributions to world culture, so the figure of Goethe's Faust stands beside Hamlet and Don Quixote as one of the great figures in Western literature.

Beyond its contribution to a liberal arts education, this major leads into teaching (at all levels: elementary, high-school, college, and university) and toward the government's Foreign Service as well as into such channels, potentially, as the export and import trade with German-speaking countries (Germany, Austria, and Switzerland).

An opportunity for the experience of foreign study is offered through the Duke summer study program in Münster, Germany, as well as through approved Junior Year Abroad programs of other colleges and universities.

The Department offers an honors program leading to Graduation with Distinction.

GREEK

(See Classical Studies)

HISTORY

History 1 (Fall), 2 (Spring), A History of European Civilization

Aware that almost every student who enrolls in Duke University will have had courses in history, the History Department has attempted to provide a course for freshmen which will be instructive and interesting not only to those students who have had little or no history, but also to those who have studied history for several years. The introductory course offers a student an opportunity to understand better how his own society has developed. It also helps him to appreciate present-day problems in a way which the study of the past alone can supply—by examining both the developments that gave rise to these problems and the more general questions of historical causation. The study of European civilization provides a broad view of the civilization that spread over much of the world and that forms the principal component of our own heritage. It also furnishes an intellectual framework into which the student can fit his further study of such elements of civilization as art, literature, economic systems, government, and science, as well as more intensified study of European or American history. In tracing the impact of European civilization on the rest of the world, it provides an introduction to the relationships between Europeans and non-Western peoples.

Equally important for the college student is the ability to evaluate critically historical writings and interpretations and to draw conclusions himself from the primary sources from which history is written. Consequently, considerable emphasis is placed upon encouraging the student to think critically and upon training in the techniques of historical investigation.

History 1x (Fall), 2x (Spring)

History 1x-2x is designed as a seminar-type course for students who have had a good background in European history, who can read and comprehend rather large amounts of historical material in a semester, and who are capable of examining historical problems with a minimum of attention to historical chronology. The Department determines those who are qualified by consideration of SAT verbal scores, completion of three units of high school history, and an interview with the student during Freshman Week. Students who have earned a score of three or higher on the Advanced Placement Examination in American history may also be admitted to the course.

The class will meet less frequently than the regular freshman sections, and each section of 1x-2x will number approximately twelve to fourteen students. Class discussions will be on readings assigned during the previous period, and debates may be arranged between members of the class on various topics. Various collections of source materials, pamphlets, paperback books, and articles dealing with some of the leading personalities and the major issues in

history will be used during the semester. Semester projects in the form of written papers will be required. Short papers—critiques, book reviews, and essays—will also be assigned during the term.

History 43 (Fall), 44 (Spring)

History 43 and 44 are designed as tutorial courses for freshmen who wish to supplement the regular introductory course. Meeting once every week or two in groups of about four to twelve, students discuss books and articles that accompany but do not duplicate the materials in the introductory history course.

The Major in History

History seeks to develop insights into a particular body of human activity whether it be revolution in Russia, dictatorship in Napoleonic France, or the building of empires in the New World. To impart these insights, courses in history strive to cultivate far-ranging minds and the kind of trained intellects that delight in pursuing a line of research or developing a good argument. As worthy components of a liberal education these courses espouse the view that the unexamined life is not worth living and the unexamined world is not worth living in.

At Duke a major in history is planned to allow students almost complete freedom in choosing their courses within the framework of the University philosophy of undergraduate education. Normally all majors are required to take the introductory course. In their remaining semesters of history, majors have considerable freedom of choice. The single mandatory stipulation is that two courses must be in an advanced seminar or on the senior-graduate level so that every student will have at least some opportunity for intensive investigation on a subject in an area of special interest. Beyond the work in history, the department urges majors in the department to broaden their understanding by exploring widely in the various disciplines other than history. The latitude provided within these requirements is perhaps best suggested by the increasing number of pre-medical students now majoring in history.

The History Department is in a position to offer an unusually wide range of subjects to prospective students, since all the fields offered by the Department are open to undergraduates. These fields are American (including Diplomatic, Colonial, 19th Century, 20th Century, the South, Civil War and Reconstruction, and Intellectual history), Western European (including Ancient and Medieval, the Renaissance, the French Revolution, 19th and 20th Century), English history and the British Commonwealth, Russian, Latin American, Indian and Pakistani, Far Eastern, Military, and Naval history as well as the history of science.

In addition to the individual courses offered in the various fields, the History Department has introduced a special program of seminars with enrollment limited to no more than a dozen in each to encour-

age students who are interested in doing advanced reading and research. Specially qualified students may also do independent reading and research under the supervision of a member of the staff. A senior seminar is provided for superior students, particularly those working toward Graduation with Distinction in History. But whether one qualifies for "Distinction" or not, a major in history should help prepare a thoughtful student to enter the many occupations in life which are open to graduates of a liberal arts college.

LATIN

(See Classical Studies)

MATHEMATICS

Mathematics 17 (Fall) Introduction to Finite Mathematics

Mathematics 17 introduces students, early in their college career, to several concepts in modern mathematics. The first topics covered are close to students' experience, and the whole range comprises elementary logic, sets, vectors and matrices, and probability theory. Applications to problems arising in the biological, physical, and social sciences are stressed. In contrast to calculus, which deals with infinite sets and limiting processes, this course deals with finite sets of objects. Many of the most profound problems in mathematics are finite in character.

Mathematics 17 is primarily designed for students who do not intend to major in a sicence.

Mathematics 21 (Fall), 22 (Spring), Introductory Calculus

Most students will begin their mathematical training with the course entitled Introductory Calculus. The concept of a function will be introduced, and trigonometric, logarithmic, and exponential functions will be given special attention. Graphs and applications of such functions will form a basic part of this course. In the section on plane analytic geometry, the equations of straight lines, circles, parabolas, ellipses, and hyperbolas will be derived and properties of these curves will be studied.

In another part of the course the concepts of the calculus will be taught. The discussion of many of the types of motion that are of interest, e.g., the motion of molecules in a gas, the flight of an airplane, and the flight of a rocket require ideas that form the basic part of calculus. The calculus concepts also enable one to find the lengths of curves, surface areas, and the volumes of irregularly-shaped solids. In this course students will be given the tools and calculus concepts that will enable them to solve many of the above-mentioned types of problems.

Mathematics 41 (Fall), 42 (Spring)

For students who have demonstrated marked proficiency in mathematics the Department offers special courses. In these the topics of Mathematics 21, 22 are covered in a more extensive and rigorous fashion.

Candidates for the special sections must present four units of college preparatory mathematics and SAT verbal and mathematical test scores of 740 or above.

Mathematics 51 (Fall or Spring)
Introduction to Digital Computation

The first portion of the course deals with the nature of a digital computer, the function of its parts, and the process of programming to solve simple problems. In the second part of the course, the student learns an algorithmic language for presenting problems to computers. This language is similar in form to the English used to state mathematical problems and may be used with many kinds of computers. Each computer translates a problem-solving procedure written in the algorithmic language into its own language and then solves the stated problem. Practical mathematical methods are also developed for the machine solution of problems in certain areas of biology, engineering, mathematics, physics, and social sciences.

The Major in Mathematics

Knowledge of the areas encompassed by mathematics and what this "science" has to offer can be gained from a discussion of its three main branches: algebra, geometry, and analysis. The division known as algebra stemmed from arithmetic and now includes such fields as abstract algebra, group theory, and number theory. The algebra to which students are introduced in high school is a powerful tool for solving certain types of problems, but it is only one of the many types of algebra. Some of these various abstract algebras have found applications in the physical and social sciences.

The second branch of mathematics, geometry, had its origins in the space apperception of primitive man. The Greeks, combining space concepts with logical and abstract reasoning, developed a postulation or axiomatic system known as the Elements of Euclid. The Arabs added trigonometry to the field of geometry, and the French philosopher Descartes introduced the notion of coordinates, which permitted algebra to enter into the study of geometry. Differential geometry, which arose during the eighteenth century, played an important role in the development of Einstein's theory of general relativity. The first half of the nineteenth century saw the development of several non-Euclidean geometries. The newest subfield of geometry is that of topology. It treats those aspects of figures which do not change under deformation. This newest member of the geometry family came into being at the turn of this century and in

the short time since its inception, has engulfed all classical geometries and has had a marked influence in many other areas of mathematics, as well as in such unrelated fields as medicine and psychology.

The third branch of mathematics is called analysis; it was initiated by Leibnitz and Newton towards the end of the seventeenth century. Here a new basic concept in mathematics was added, that of a limit. This has been one of the most fruitful concepts of man; e.g., we use it in rate problems and in finding the volumes of irregular bodies. Many, many developments in chemistry, physics, and other sciences can be traced directly or indirectly to the notion of a limit. A few of the subfields of analysis are calculus, real and complex function theory, differential equations, infinite series, and measure and integration theory.

The student selecting mathematics as a major can concentrate in any one of the three branches just mentioned, or he can select those courses in each branch which appeal to his own particular interests. To these fields should be added the field known as applied mathematics which is playing an increasingly important role in scientific and technological developments. The applied mathematician is interested in the development of mathematics for its own sake as well as in the application of mathematical methods in such fields as engineering, physics, economics, and management. The student interested in applied mathematics should elect courses in analysis, computing, probability, statistics, and mathematical logic. He should also be interested in a related field such as physics or economics.

In the senior year, a major may pursue independent study leading to Graduation with Distinction.

MUSIC

Music 1 (Fall), 2 (Spring), Introduction to Music

Music 1-2 is designed for the general student who wishes to experience and investigate the musical heritage of Western civilization and to develop critical insights into musical styles, forms and techniques. Representative works of the major composers from the seventeenth century to the present constitute the primary material of the course. No musical skills are prerequisite.

Music 65 (Fall), 66 (Spring), Theory

This course introduces the study sequence leading to a major in music. It deals with (1) the comprehension of those basic melodic, rhythmic and harmonic techniques upon which Western music is based; (2) the application of these techniques in written exercises and short original compositions with emphasis upon both the linear and harmonic aspects; and (3) the sharpening of skills involving ear training, sight singing, and keyboard harmony.

The course is a composite lecture-discussion-laboratory presentation taught by the theory staff. It is by no means limited to music majors but it does presuppose an acquaintance with musical symbols.

Music 47 (Fall), 48 (Spring), Applied Music

Private instruction from artist-teachers is available in voice, piano, organ, and orchestral instruments. A course of study may be continued for four years and should lead the student through the establishment of a secure technical foundation and into a serious study of the interpretation of musical styles and literature. Prospective music majors should begin this work in the freshman year. General students with previous study backgrounds are also welcome.

The Major in Music

The study of music is usually approached through one of three different divisions of the field. Each of these may be considered a "specialization," but a balanced knowledge of all three is essential to the training of a fine musician. These branches are (a) musical performance, (b) musical theory and composition, and (c) music history and musicology.

In order to achieve highest competence in *musical performance* a solid background of technical discipline within a specified medium (for example, piano, violin, or flute) is necessary. This discipline can best be established in the early years and should be well developed at the time of college entrance. At whatever stage one decides upon the study of music, however, the acquaintance and technical mastery of an instrument is essential to the development of musical understanding. This should not be postponed.

The study of *musical theory* encompasses a thorough investigation of the styles and technical resources utilized in compositions which represent the continuity of musical development in Western civilization. Those which are still experimental and which may constitute bases for the art of the future are also studied. The student is encouraged to work with this material in original constructions.

Music history and *musicology* are branches of general historical study. The manifestations of a civilization in terms of its culture are as revealing as those of its politics. This field is not restricted to the prospective professional musician. Courses which cut across various historical periods and which consider music within the context of sociological, economic, and geographic milieu are designed for general students.

The Department offers honors work leading to Graduation with Distinction.

NAVAL SCIENCE

Naval Science 101 (Fall) Naval Orientation

This fall course presents an introduction to the organization of the Navy, including the background and usage of naval regulations, customs and courtesies, and shipboard duties. The characteristics, missions, and capabilities of basic types of naval vessels in carrier, air, surface, undersea, and amphibious operations are studied.

Naval Science 102 (Spring) Naval History and Seapower

This course considers the role of seapower in the history of nations, and the role of navies as instruments of national policy. Modern techniques of naval warfare and modern applications of naval power are studied as the products of a historical evolution. The interrelationship of changing weapon technology and the development of naval tactics is investigated, as well as contrasting concepts of the strategic employment of seapower.

Naval Science Studies

The NROTC, though its four-year Naval Science Course, provides an outstanding opportunity for the undergraduate student to be awarded a commission in the Navy or Marine Corps at the same time he receives his baccalaureate degree. NROTC students are eligible to compete for the regular NROTC program which provides full tuition, fees, books, $50 per month retainer pay, and the opportunity to participate in summer cruises with fleet surface and air units in Atlantic and European waters. Seniors may obtain their private flying license at Navy expense. In addition, the opportunity is available to continue toward a graduate degree prior to reporting for active duty.

Students already accepted in the NROTC, or those contemplating enrollment in the program after arriving on campus, should register for Naval Science 101.

NURSING
(School of Nursing)

The School of Nursing offers a program designed to prepare persons for beginning positions in professional nursing and to provide the foundation for graduate education. Graduates receive the Bachelor of Science in Nursing degree and are eligible to apply for licensure in any state.

The balanced curriculum, which can be completed in four years, includes courses from the liberal arts, the sciences, nursing, and selected experiences in a professional milieu. The objective of the program is to assist students in acquiring (1) an understanding and appreciation of the world in which they live, their relationship to it and their opportunities and responsibilities within it; (2) the knowledge, understanding, and skills essential in the practice of nursing; and (3) the foundations for continued professional growth.

The freshmen and sophomore years are devoted to the study of the liberal arts and basic sciences. During this period special activities are planned to introduce students to nursing. The focus of the junior and senior years is the nursing major. A wide variety of experiences is offered with patients, families, and community programs in the Duke University Medical Center and other health agencies in Durham. Students are encouraged to develop independently special interests related to nursing.

PHILOSOPHY

Philosophy 41 (Fall), 42 (Spring)
Knowledge, Fact, and Value

These courses provide an introduction to philosophy through the study of its main problems. Philosophy 41 studies the problems that arise when one thinks seriously about the nature of reality and his knowledge of it. Philosophy 42 deals critically with the problems arising when one thinks seriously about values, and in particular, about moral and political values.

Both of these courses usually involve a certain amount of reading in the philosophical classics. Although neither course is standardized, a student in Philosophy 41 might find himself reading from the works of Descartes, Berkeley, Hume and Russell. In Philosophy 42, it might be Plato, Kant and J. S. Mill. No attempt is made at a comprehensive treatment of the history of philosophy. In these courses students with a talent for abstract reasoning tend to do well; others have to work to develop this ability.

Philosophy 41 and Philosophy 42 may be taken in either order, or concurrently.

Philosophy 43 (Fall), 44 (Spring)

Philosophy 43 and 44 are designed as tutorial courses for any freshman who, being enrolled in Philosophy 41 or 42, wishes to supplement the regular introductory course. Meeting once every two weeks or so, in groups of four to six each, students write original papers for discussion or discuss books and articles that accompany but do not duplicate the materials in the introductory philosophy course.

Philosophy 48 (Fall or Spring) Logic

Philosophy 48 deals with the analysis and evaluation of reasoned arguments. It provides a general method for formulating and testing the validity of many different types of argument. The course also aims at making the student sensitive to alternate interpretations that may be put on an argument, and aware of the part played by ambiguity and vagueness.

The student learns to use some of the techniques of modern symbolic logic and gains some sense of what is meant by rigor in formulation and proof, and of the nature of formal sciences.

The Major in Philosophy

Philosophy grows out of a group of questions and issues that are as old as our civilization. Most intelligent persons have pondered them at some times in their lives. What sort of universe do we live in? Is it mental, physical, or both? Does it have some over-all purpose or plan? And what about man? Is there some

purpose or meaning in life? Does man have free will or is his behavior determined? The philosopher seeks to answer these questions or, failing that, at least to understand them.

Gradually, there have arisen divisions, or major areas in philosophy, each of which can be studied in some isolation from the others. For example, questions of free will may raise questions about the nature of caused behavior, the nature of motivation, of choosing, of intending, and of thinking. These issues form a separate area which we call philosophy of mind. Again, the question of what our aims and purposes are or should be raises further questions which belong to the discipline we call ethics, which investigates such topics as the nature of moral standards, how they are established and justified, and with the analysis of such concepts as "good," "ought," and "right."

Philosophers in trying to answer these questions have found themselves raising in turn such questions as: How do we establish the truth of what we say? How do we test our beliefs? What constitutes good evidence? What is the difference between knowing and merely believing? This area in philosophy is called the theory of knowledge or epistemology.

When we offer answers to our questions, or offer the solution of a problem, we try to give reasons for our answers. We try to justify and show the soundness of our conclusions. The study of this activity is logic, a branch of the theory of knowledge. Logic deals among other things with the nature of arguments, the differences between sound and unsound reasoning. Out of it grows the investigation into the ways in which general principles or laws are established in the sciences, which we call inductive logic. Related to this is the study of the ways in which conclusions are established in legal arguments, in art criticism, and in evaluation.

Philosophy is old, inasmuch as philosophers have been working with these problems since the dawn of civilization. And yet philosophy is always new, since succeeding centuries encounter new problems and discover new ways of approaching the old. In the twentieth century, philosophy has discovered a new vantage point from which to examine its problems, that of the study of language, and the relations between language, thought, and the world. Viewed from this new standpoint, many of the traditional issues can be seen clearly in a way that never was possible before. And yet the contemporary emphasis on language, which reaches into nearly every corner of philosophy, gives rise to new and special problems of its own, which are studied in formal logic, semantics, and the philosophy of language.

Here then are a few of the major areas in philosophy. Within them one can find subordinate and related studies such as philosophy of science, philosophy of art, philosophy of law, and philosophy of religion.

This brief sketch cannot do more than suggest the way in which the parts of philosophy grow out of and sometimes discard earlier

parts; new issues, new fields develop in philosophy. Philosophy, moreover, is one of the few subjects which studies its own history. Part of the study of philosophy is the history of philosophy, that is, the study of what the great philosophers of the past, Plato, Aristotle, Aquinas, Kant, and Hume, to name a few, had to say on the fundamental issues, and, in fact, which issues they regarded as fundamental. Ancient philosophy is not outmoded because it is ancient any more than ancient art is outmoded.

Philosophy is self-conscious in a way that other disciplines are not. For it seeks a total view of things and in trying to answer its questions, it turns and investigates its own methods and techniques in giving answers. The philosopher, as it were, is always trying to look over his own shoulder to see what he is doing. In this awkward posture, he advances as best he can against the multitude of problems that beset him, while at the same time wrestling with the question "What is Philosophy?", perhaps the most difficult question of all. It will not be surprising to learn that philosophy has always been controversial; despite large areas of agreement, there are many issues on which philosophers differ widely.

A major in philosophy offers an opportunity to study most of the areas within the discipline. It does not, in itself, lead directly to any career except teaching. But students planning a career in other areas will often major in philosophy because they wish to avoid specializing too soon, or because they recognize the general value of philosophic study in becoming aware of the methods, assumptions and goals of whatever field one works in, and because philosophy, by stressing this broad vision, contributes to the development of cultured and thoughtful individuals. Knowledge of philosophy has always been considered necessary for any educated person.

In the senior year, a major may pursue independent study leading to Graduation with Distinction.

PHYSICAL EDUCATION

Physical Education (Men) 1 (Fall), 2 (Spring), Foundation of Physical Education

In this program an attempt is made to present the "why" and "how" of physical activity to male freshmen. During the first two class meetings, students are given a general orientation to the total program as well as the following battery of tests: agility run, vertical jump, back extension and flexion, hand grip strength, height and weight measures, swimming test, and posture pictures. These scores are recorded on a master score card on which percentile norms have been indicated. This card is used for reference throughout the semester, and for recording future types of tests relating to muscular endurance, balance, coordination, heart efficiency, and the like.

Following the preliminary test pattern, students are provided an opportunity to become acquainted with various concepts of preventive

medicine and health maintenance. This involves information concerning weight control, cardiorespiratory fitness, training techniques, relaxation techniques, body type and health, fatigue, rest and recreation.

Students are guided into areas of need as indicated by the preliminary tests. Those who cannot swim are enrolled in Beginning Swimming; those who lack coordination, strength or endurance are enrolled in individual development; whereas, those in need of improvement in relation to posture, weight control, or certain physical disabilities or limitations, are enrolled in adapted physical education. Those students not involved in the above phase of the program follow a program designed to orient them to a variety of physical activities including tennis, golf, badminton, volleyball, gymnastics, swimming, fencing and others. Students are grouped in accordance with their basic potential in order to provide the most effective learning experience. Emphasis in this program is to provide a basis for more intelligent activity selection in the future, develop an awareness of physical potential, enhance present levels of health and fitness, and personalize program offerings to meet individual needs both present and future.

The second semester of the freshman year involves a continuation of the guidance pattern established. Students whose needs can best be met in certain phases of the program are directed into those activities which can adequately achieve this goal. Other students have an opportunity to select courses from among the various offerings available. They have an opportunity to improve present skills and experience satisfaction in learning new skills. Freshmen are encouraged to learn those activities which will be satisfying and enjoyable and adapted to their body potential to the end that they will be motivated to want to continue to be physically active throughout their lives.

In each semester of his sophomore year, the student is guided into one of the following sports: basketball-handball, golf, swimming and life saving, tennis, volleyball, gymnastics, individual development.

Students who are physically limited may take a medically prescribed program of adapted physical education.

Physical Education (Women) 1 (Fall), 2 (Spring), Foundations of Physical Education

Through the required physical education classes, each student becomes aware of her potentialities and needs in efficient movement; she gains an understanding of the importance of exercise as a part of effective living in adult years; she has the opportunity to improve skills and to gain the satisfaction that comes from learning new ones; and she broadens her understanding of the place of sports and dance in American culture. This learning takes place during the classwork of the first two years.

Because of the wide range of physical education abilities among entering freshmen, a series of placement tests is given during Freshman Week. Students with exceptional ability in sport skills may enroll in "X" classes in which they progress at a maximum rate of speed. Freshmen with specific needs in posture, sport skills, and swimming take special work in one of these areas during the first half of the semester. Other students elect activities such as golf, hockey, riding, modern dance, swimming, and tennis. The winter activities include batminton, basketball, bowling, fencing, gymnastics, swimming, volleyball and several types of dance. Courses are divided into beginning, intermediate, and advanced sections, and each student registers in the section which corresponds to her ability.

The Major in Health and Physical Education (The Woman's College)

The major program in physical education in The Woman's College has as its purpose the developing of teachers whose understanding of human needs and behavior and whose knowledge of basic theory as well as skill in performance make them worthy leaders of youth. Physical education in some form is universal. It is inherently interesting to children of all ages and to most adults. It is a broad field covering many aspects of motor activity, such as sports, aquatics, gymnastics, the many forms of dance, and recreational activities.

The courses in the major program fall into three main categories: principles, methods and materials, and biological science. In studying the history and principles of physical education, the student discovers the part that physical education has played from the early Greek civilizations to the present time. She learns the place of sports, dance, aquatics, and gymnastics in American and European cultures of today. She studies the activity needs and interests of childern of different ages and becomes familiar with the laws of learning as applied to the learning of movement skills. Problems of administration in school physical education, program planning, health, and safety are some of the topics studied in other theory courses.

The courses in methods and materials of physical education, health education and recreation are directed primarily toward teaching at the secondary level; however, students majoring in other areas, such as sociology or religion, find certain of these courses valuable as related work.

A strong background of biological science is also necessary for the major. A course in mammalian anatomy gives students an understanding of all the organ systems and emphasizes particularly the nervous, muscular, and skeletal systems of the human body. In kinesiology human movement is studied. Students review the mechanical principles which apply to human motion and discover the characteristics of movement essential to the development of skill and

conservation of energy. Physiology is included in order that students may understand the body functions as a basis for healthful living, and may engage in or lead activity with awareness of the effects of exercise on the human mechanism.

In addition, the major student needs a broad general education. Courses in written and spoken English, literature, art, music, psychology, and sociology are especially desirable. The broader her educational background and her understanding of people, the more valuable she becomes as a leader and teacher.

PHYSICS

Physics 1 (Fall), 2 (Spring), Introductory Physics
Physics 41 (Fall), 42 (Spring), General Physics

The Department of Physics offers three different courses at the introductory level: (1) Physics 1-2, primarily for those students who do not intend to major in sicence (good preparation in algebra is required, but not necessarily in trigonometry); (2) Physics 51-52, for science majors (other than physics majors), engineers, pre-medical students, and others who wish to elect it (Introductory Calculus must be taken prior to or concurrently with Physics 51-52; freshmen students are well advised to postpone Physics 51-52 to the sophomore year); and (3) Physics 41–42, for freshmen intending to major in physics.

In scope the introductory courses include the study of mechanics, heat, optics, acoustics, electricity and magnetism, and atomic and nuclear physics. As examples, the concepts dealt with in two of these fields can profitably be given in more detail. In mechanics one considers such things as forces and accelerated motion, mechanical energy, and the conservation laws for momentum and energy, rotational and planetary motion, oscillatory motion, and gravitation. Again, in electricity and magnetism, which are taken up together because of their close relationship to one another, the properties of electric and magnetic fields produced by stationary and moving charges, the forces on electric charges in electric fields and on currents in magnetic fields, and direct and alternating current circuits are studied.

The Major in Physics

Physics has been recognized more and more as one of the most absorbing subjects in the natural sciences. Many of the most important discoveries in this century have been in the field of physics. In the last decade for instance, the study of elementary particles and the invention of the MASER and LASER have had far reaching effects on our basic knowledge of matter. The study of semiconductors that led to the invention of the transistor has greatly increased our insight into the nature of crystalline solids and has also resulted in a breakthrough for the electronics industry. The rapid develop-

ment of physics in the last decade has shown the need for more physicists in basic physics, in applied physics, and in the teaching profession.

The Department offers a full program for a major. The sequence of courses is usually introductory physics, intermediate mechanics and electricity, electronics, solid state physics, kinetic theory of gases and thermodynamics, advanced laboratory, electromagnetic theory and physical optics, and atomic nuclear physics. The undergraduate does not specialize in a given field of physics, but receives an extensive training in the several basic areas. This prepares him for graduate work in physics or work in other sciences and in engineering.

Senior majors who have demonstrated their ability in course work and in the laboratory can pursue independent research and study in a program leading toward Graduation with Distinction. At all levels there exists the opportunity to become aware of the nature of the research being carried out in the fields of nuclear physics, particle physics, the study of the structure of molecules and solids using both microwave and optical techniques, the properties of matter at temperatures approaching absolute zero, and theoretical physics.

Physics majors usually "minor" in mathematics, and are also expected to take a course in college chemistry, with a recommendation that additional work in chemistry be taken. As a whole, the work elected by the undergraduate major provides a desirably broad liberal arts base. This background is especially important for the person planning to become a professional physicist since he will soon become specialized.

POLITICAL SCIENCE

Political Science 11 (Fall)
The American Political System

Political Science 11 provides an introduction to the principles and practices of the government of the United States. It includes a consideration of such topics as: constitutionalism and the ways of restricting political power; the role and influence of political parties and pressure groups; means of achieving effective relationships between the President and Congress; ways of making bureaucracy responsive and responsible; federalism in theory and practice; the judicial function, with special attention to U. S. Supreme Court decisions involving freedom of speech, freedom of religion, equal protection of the laws and related issues of personal liberty; a selected number of issues in the arena of domestic and foreign policy. During the spring semester the student may take any 100-level course not restricted to upperclassmen.

Political Science 11x (Fall)

This section is open to freshmen who have high SAT verbal scores and whose academic record and special interest in the subject matter of the course give promise of superior performance. The section is limited in enrollment, emphasizes class discussion and concentrates upon a more intensive examination of a selected number of contemporary political problems and issues.

The Major in Political Science

The Department of Political Science seeks to convey an understanding of the philosophies, practices, and problems of government and politics. Political science is concerned with the perennial effort to reconcile the claims of justice and power, liberty and authority. In pursuing this broad objective a variety of materials and approaches are used: historical, legal, institutional, philosophical, empirical and quantitative. As a consequence, political science is a broadly-based social science, one sharing the aims of a liberal arts education as well as one evoking concern for an understanding of the public policy problems of our time. Political science seeks to understand why human beings behave as they do in the arena of politics. It is concerned both with the collection of empirical data about such behavior, with an examination of the process of decision-making and with the normative judgments which influence political decisions. Although of benefit to those students seeking a broad, liberal education, the study of political science is likely to be of special usefulness to those interested in a career in law, politics, business, journalism, teaching, foreign service and government employment.

The student majoring in political science begins with the course on the American Political System. In addition he must take twenty-one semester hours of course work distributed within three of four fields of political science including six semester hours of any course in the 200 group. He must take a minimum of eighteen semester hours of related work normally chosen from two of the following fields: history, economics, sociology, philosophy, psychology. Interdisciplinary courses may be counted as related work.

In the area of *Political Theory and Methodology* courses are offered in political philosophy from Plato to modern times, in American political thought and in empirical theory and methodology. In the field of *American Government and Public Administration* attention is focused upon problems of constitutional law, civil liberties, the bureaucracy, governmental planning, urban and metropolitan problems. Also emphasized are the less formal aspects of political activity including political behavior in elections, activities of political parties and pressure groups, the legislative and judicial process of decision-making. In the field of *Comparative Government* attention is focused on the political processes and institutions found in Europe, Asia, Africa and Latin America. Special attention is given to the

problems of political development in the new states. In the field of *International Law and Relations* the student may select from among courses concerned with international politics, law, and organization. Courses are also given on American foreign policy.

In all four areas attention is given to problems relevant to contemporary concerns, such as a comparison of democratic and totalitarian theories and practices, the politics of mature and underdeveloped nations, the relationships of law and power both domestically and in the international arena.

The Department of Political Science makes provision for independent study for qualified juniors and seniors and offers undergraduate seminars. A senior seminar open to qualified majors leads to the preparation of an honors thesis and to Graduation with Distinction.

PSYCHOLOGY

Psychology 91 (Spring) Introductory Psychology

Psychology is the field of study which seeks by scientific methods to describe, understand, and predict the behavior of living organisms. Psychology 91 gives the student an overview of the science. The course content includes such diverse areas as the nature of scientific method; experimentation and qualification as applied to the study of behavior; intelligence and the factors influencing it; the basis for learning, perception, sensation, and motivation; the nature of personality—its manifestations and origins; and social and abnormal behavior. Considerable attention is given to the experimental literature and its relevance to the development of a theory of behavior.

The Major in Psychology

Over the last half century the field of psychology has undergone an enormous expansion, stimulated in large measure by the demonstrated practical value of psychology in a variety of areas of application. Intelligence testing, human engineering, public opinion polling, career counseling, motivational research, market surveys, and clinical interviewing all depend to some extent upon basic psychological knowledge.

Although these applications of psychology are important and interesting, it must be recognized that they *are* applications, that is, they draw upon the essential substance of psychology discovered in studies of general experimental psychology. Because of the widespread availability in the popular press of information on applied psychology, many beginning students do not have this idea, and are surprised when they discover in the introductory course that psychology does not deal primarily with applications to industry, mental health, academic adjustment, or with occult phenomena, but rather with a set of general scientific principles and the methods by which these principles are established.

In keeping with the importance of general experimental psychology, the psychology major at Duke University is designed to make sure that a student becomes acquainted with this basic field. This emphasis begins in the introductory course. In Introductory Psychology, he studies a series of standard topics which provide him with a survey of the materials which later courses cover in more detail. A student who enjoys the beginning course will probably find the major in psychology exciting.

Beyond the introductory course the student who majors in psychology is required to complete seven semester courses in psychology, including a one semester course in statistics. The courses not covered by specific requirements may be selected from such offerings as biological psychology, child psychology, tests and measurements, applied psychology, and social psychology.

For the major student who is interested and capable, the Psychology Department offers several opportunities for intensive contacts with faculty members. Certain intermediate-level courses entail the completion of a project, which involves experimental work. At more advanced levels a flexible tutorial program (featuring small group discussions) is available. Finally, there are two series of courses which allow the student to do independent study and research. One of these sequences leads to Graduation with Distinction in psychology.

RELIGION

Religion 1 (Fall), 2 (Spring), The English Bible

Religion 1-2 is a comprehensive study of the Bible, including the reading and discussion of the most important parts of the Old and New Testments. Study of the biblical texts themselves is the primary emphasis of the course, but this enterprise requires considerable reading of selected works of biblical scholarship. Some classes employ short analytical essays and occasional research papers as aids to learning. The complexity of biblical materials and the great mass of significant scholarship in the field make this course a demanding and stimulating one.

Inasmuch as the Bible contains the primary literatures of the basic religious traditions of the West, this course, conceived as a humanities study, is of indispensable significance for a liberal education. A major aim of the course is to help a student, through a creative apprehension of the past, to become aware of the crucial role played by biblical religion in the development of Western thought.

The Bible is studied in the light of its origins in the history and religion of biblical times. While each professor emphasizes to some degree his special interests and enthusiasms, he is sensitive to the varied religious backgrounds of his students and attempts to present the Bible in the best scholarly traditions of historical, critical, and phenomenological analysis.

Religion 43 (Fall), 44 (Spring), Tutorial

An optional tutorial is offered to freshmen enrolled in Religion 1 and 2 as a supplementary study. It will accent independent investigation and a close working relationship between the professor and student.

The Major in Religion

The Department of Religion represents a program of studies which is considered integral to a liberal education. While the existence of a vigorous and distinctive program of studies in religion at Duke is largely to be explained historically by the relationship of the university to the Church, the present emphasis is upon the study of religion as an element of liberal culture and as one of the humanities. A clear distinction is made between the study of religion (the role of the Department of Religion) and the practice of it (the role of the Chapel and other campus ministries). Recognizing that confusion at this point has contributed to a situation that has driven the study of religion from the curriculum of many American universities and isolated the practice of religion from the main stream of university life, the Department is committed to historical, critical, and phenomenological methods of study which sustain its role as one of the humanities.

Studies in religion, like those in any of the other humanities, develop according to the content of the subject matter, the personality, training, and proclivities of the teacher, and the receptivity of the student. The professor seeks to show with imagination and sensitivity how a particular vision of life or system of thought looks from the inside, and in this process to open for himself and his students new possibilities for the understanding of human life. As in the case of literature, art, music, philosophy, and history, the study of religion lends itself to the possibility that something can be learned for the enlargement of the minds and lives of men.

Since Christianity has been the dominant religious force in Western culture, the first objective of the study of religion is an understanding of this religion. But this leads to the sources, or the primary literatures of the Old and New Testaments. The program of study begins for all students at this point, and expands into five areas of further study: (1) Biblical Studies; (2) History of Religions; (3) Church History; (4) Theology and Ethics; (5) Christianity and Culture. Every major in religion participates through class study or directed readings and examinations in all of these areas, though he also emphasizes his special interest in one field.

A major in religion is a live option for students whose vocational aim is law, medicine, scholarship and teaching in religion, the various ministries of the Church, and many types of governmental and social service. It is also an intelligent major for a student, not yet vocationally committed, whose concern in selecting a major is to assure a liberal education in the humanities tradition.

The program of studies in religion is designed to give coherence and structure to the work of majors, while also allowing majors and others maximum opportunity for accelerated study and personal achievement. The following facts are worthy of attention: (1) a 1 s.h. course (Religion 100), designed to help a student explore research techniques, is required of all majors and open to other students; (2) qualified juniors and seniors are encouraged to pursue independent reading with the possibility of earning substantial credit in this manner; (3) well-qualified majors, who aspire to Graduation with Distinction, are invited to participate in an independent study program beginning normally in the junior year; and (4) Senior Seminars, dealing intensively with a selected topic, are open to all qualified students.

ROMANCE LANGUAGES

French 1 (Fall), 2 (Spring), Elementary French
Spanish 1 (Fall), 2 (Spring), Elementary Spanish

French 1-2 and Spanish 1-2 offer an intensive aural-oral introduction to the language, followed by careful reading of edited texts. In each of these courses the recitation is supplemented by regular laboratory listening sessions.

French 63 (Fall), 64 (Spring), Intermediate French
Spanish 63 (Fall), 64 (Spring), Intermediate Spanish

French (Spanish) 63-64 is an integrated course in speaking, reading, and writing. There is a systematic review of the basic grammar and an extended reading program. Frequent listening periods in the laboratory are a regular part of the course.

French 91 (Fall), 92 (Spring), Introduction to French Literature
Spanish 91 (Fall), 92 (Spring)
Introduction to Spanish Literature

French (Spanish) 91, 92 is designed to acquaint the student with the great personalities and the dominant styles and modes of thought which constitute the literary tradition of each country. The student utilizes as an instrument of literary study the language skills which he has acquired in basic courses: he reads to comprehend the thought of the writer and to appreciate the qualities of his expression; he hears his teacher explain and comment in French or Spanish on the texts; he is encouraged to express in the language his own understanding of what he has read.

Freshmen entering The Woman's College who qualify for French or Spanish 91 are eligible to apply for residence in the French or Spanish Corridor in a dormitory on The Woman's College Campus. A small group of freshmen women will be admitted, along with members of the sophomore, junior and senior classes, to each of these

living-learning corridors. Native speaking faculty associates live with the students in the corridors where all conversation is in French or Spanish. Any student interested in residence in the French or Spanish Corridor is invited to correspond with the Dean of Instruction in The Woman's College, giving particulars of her qualifications.

French 100 (Fall), Masterworks of French Literature

An intensive study of selected works of French literature with special emphasis on developing critical techniques. Open only to Freshmen through the Advanced Placement Program or by invitation of the Department.

The Major in French or Spanish

When a student elects to concentrate in French or Spanish, he has decided to study at some depth two important aspects of a particular culture: the language and the literature. At Duke, if he majors in one of these Romance languages, several courses in oral or written French or Spanish will extend and strengthen the skills of speaking and reading French or Spanish. He will devote the greater portion of his time and effort to the study of the national literature. Proficiency in the use of the language skills will therefore provide him with insights and appreciation of the literary works. The French or Spanish major will obtain a complete experience of the literature of his specialty by a judicious choice of courses ranging over the whole field of the literature. It goes without saying that this contact with the literary masterpieces will create appreciation of and sympathy for the people whose literature he is studying.

We believe, however, that the study of a national literature must be made within the perspective of the humanities and history. We therefore try to balance the major program by incorporating into it related study in history, philosophy, fine arts, and other literature.

A man or woman who majors in the humanities is by definition attempting to understand "man" and to prepare himself for an intelligent adjustment to the society of his fellow men. In deciding to concentrate in one or more foreign languages he can work toward this goal and also prepare himself for a possible career in government, industry, foreign commerce, or teaching.

Students majoring in Romance languages will find regular extra-class activities which put the practical knowledge of the languages to use. There are honorary societies and informal supper meetings of language groups where conversation is carried on in French or Spanish. Every year students present a French play. There is a French Corridor and a Spanish Corridor on the campus of The Woman's College, under the direction of resident native French and Spanish women, where the students pledge to use the French or Spanish language exclusively. Students may also take advantage of Junior Year Abroad programs of other colleges and universities.

In the senior year, especially qualified students may pursue independent studies leading to Graduation with Distinction.

RUSSIAN

(*See Slavic Languages and Literatures*)

SLAVIC LANGUAGES AND LITERATURES

Russian 1 (Fall), 2 (Spring)
Introduction to the Russian Language

This course introduces the structure of the Russian language. The main objective is to familiarize the student with those features of Russian—its inflectional nature and verbal aspects—that are likely to seem strange to one accustomed to speaking English.

Russian 63 (Fall), 64 (Spring)
Intermediate Russian Language

The chief goals of this course are those of acquiring the basic vocabulary needed to express ideas in Russian, increasing reading speed with the aid of a dictionary, gaining practice in sight reading, and oral practice. The last is especially valuable since it encourages thinking in Russian rather than translating thoughts from English into Russian.

The Major in Russian

Like the more traditional language majors, the major in Russian emphasizes the study of culture, literature, and history as well as language. Both pre- and post-revolutionary Russia are, of course, included in these studies.

Today the reasons why an American should study Russian and the Russian people are more compelling than ever. In recent years the Soviet Union has dramatically and irrevocably emerged as a young, vigorous, and aggressive world power. The need for persons with a command of the Russian language, and with training in some aspect of Soviet life, or the ability to view a recognized discipline against Soviet backgrounds, is widely recognized. Russian is a language in which a critical shortage of experts exists; and the establishment of preferential government grants for those students who pursue graduate studies in Russian attests to this fact.

Moreover, Russian is the mother tongue of over 100 million people. It is also the administrative language of the Soviet Union. Hence, it is an acquired language for another 100 million non-Russian citizens of the USSR and can serve to unlock the world of other groups within the Soviet Union. These peoples include the Slavic minorities such as the Ukranians and the non-Slavic members like the Georgians and the peoples of Siberia. Russian is the only bridge between the latter groups and the outside world.

In addition to these immediate needs for learning Russian, sight is not lost of the importance of earlier Russian contributions to the culture of our time. Classical Russian literature of the nineteenth century, with such names as Pushkin, Dostoevsky and Tolstoy, has a place alongside the great periods of flowering of Western and Eastern culture. Other Russian contributions in linguistics, literary theory, and history are just now beginning to be appreciated.

Russian studies present a challenge, but one well worth the effort. While it must be admitted that Russian is a difficult language, none of its difficulties is insurmountable. Of great help is the fact that Russian is an Indo-European language and has formal categories and a basic syntax little different from those of other members of the Indo-European family like Latin and English. As the student of Russian probes more deeply into his field he will also be struck by the similarities between Russian culture and the culture of the Western world, similarities that are often obscured by superficial differences. He will be equally impressed by the often deep differences lying under apparently similar and analogous institutions. It is the mark of the expert to be able to distinguish between them.

The purpose of the Russian major may then be summarized as the development of persons who, as a result of a thorough and scholarly study of the Russian language and Soviet institutions, have the foundation on which to build the further knowledge so necessary to those whose role will be to understand the Russian world and to interpret this world to their own countrymen.

For those freshmen who may eventually go into graduate work in the Slavic field, attention is drawn to the fact that the Department of Slavic Languages and Literatures offers two courses in Polish literature in translation and is planning to offer courses in the Polish language beginning in 1969-1970. These courses will be open only to juniors and seniors.

SOCIOLOGY AND ANTHROPOLOGY

Sociology 91 (Fall or Spring)
Introduction to Sociology: Concepts and Procedures

This course emphasizes the basic concepts and procedures used to describe and understand social systems and social processes. The topics covered typically include the following: consensus and conflict within social systems, culture, social change, social interaction, and such major institutional foci as the economic system, the state, the family, and the church. Attention is also given to the various levels of sociological analysis—individual, group, and societal—and their relationship to one another. Conceptual approaches are illustrated and extended by the use of findings from disciplines such as demography, social psychology, organizational studies, human ecology and anthropology.

Sociology 91x (Fall)

A special section of Sociology 91 is offered for those especially interested in the study of human behavior or those who may consider a major in one of the social sciences. This section is limited to a small number of qualified freshmen selected on the basis of interest and high SAT scores.

Anthropology 93 (Fall or Spring) General Anthropology

This course is an introduction to human biology and the evolution of modern *Homo sapiens.* It will enable the student to frame meaningful questions about the origins of man, his antiquity, and the significance of human social and cultural forms.

Each instructor has his own approach to the subject. One may, for example, devote more attention to the interpretation of human fossils and the archaeological record, while another instructor concentrates on the genesis of human behavior.

Anthropology 94 (Fall or Spring) Social and Cultural Anthropology

This course explores the relations between habitat, technology, economy, and the organization of human society, with particular attention to non-literate and simple societies. Social, political, economic, and religious institutions are analyzed on a comparative as well as functional basis. The role of language in structuring human experience is introduced. The student gains an appreciation of research designs and interpretation in modern social and cultural anthropology.

As in Anthropology 93, the instructor's own orientation and field experience will determine the details of this course.

Although there are no prerequisites for either Anthropology 93 or 94, many students prefer to take Anthropology 93 first.

The Major in Sociology

Sociologists study patterns and processes in the network of human relationships we call society. Their basic subject matter is human interaction occurring at all levels: in small groups, in communities and in large organizations. Whenever people interact with each other or with their environment, there is material for research.

As one of the developing social sciences, sociology is involved not only in delineating human behavior, but with understanding it. Most sociological research is the result of intellectual curiosity, a desire to comprehend the general underlying conditions that produce, maintain, and transform social life. Sociologists seek to develop generalizations and theories from their inquiries into areas such as race relations, community structure, and unconventional behavior.

Along with the other liberal arts, sociology enriches an understanding of man, his cultural patterns, and society.

The Department of Sociology and Anthropology offers a varied program to undergraduates who desire to specialize in the systematic study of human behavior. A general course introduces the student to the scope, concepts, and methods of sociology while preparing him for more specific study in areas such as industrial relationships, the family, urban studies, race relations, mass communications, and demography. Other special areas of study include social stratification, occupations and professions, social psychology, analysis of the life cycle and collective behavior.

The Department provides its majors with opportunities for learning the skills needed for sociological research. Courses are offered in methodology, sociological statistics and sociological theory. Advanced undergraduates will be encouraged to participate actively in one of the research projects of the faculty.

For upperclassmen, there are opportunities for independent study as well as participation in the Graduation with Distinction Program.

The Major in Anthropology

Anthropology is a comparative discipline which studies mankind everywhere, in all aspects of his nature and behavior, and freely draws on other social sciences and biology to arrive at an integrated view. A student choosing anthropology as his major might begin his training by enrolling in introductory courses in sociology and zoology, following them with General and Cultural Anthropology as preparation for more advanced work in anthropology.

The discipline developed originally from a natural-history approach to the comparative study of man, including his physical makeup and his customs. Today anthropologists retain a wholistic interest in man but usually work in one of several subdisciplines. Physical anthropologists study the origin and development of man's physical nature and his place in the biological world. Their major emphasis are the study of fossils, genetic processes, and contemporary primate species. Psychological anthropologists investigate the individual's mental and emotional characteristics and growth, in cross-cultural perspective and in relation to universal human needs. Archaeologists and prehistorians concern themselves with events and processes of man's unwritten past. Anthropological linguists work with contemporary languages, as well as languages of the past, and also trace the relationship between language and culture. Social and cultural anthropologists, who form the largest group, determine the principles underlying human social and cultural behavior of all kinds. Contemporary tribal peoples, peasant societies, new nations, religious and other cultural revival movements, even the modern city—all form part of their subject matter.

The demand for well-trained anthropologists is keen. Many kinds of positions are open to anthropologists with universities and

museums, and with state, national, and international organizations. Wherever peoples of diverse cultural backgrounds live and work together, the knowledge and skills of anthropologists prove of value.

ZOOLOGY

The introductory course is described under Biology.

The Major in Zoology

Zoology is the division of biology which deals with animals. As such, it shares the pervading atmosphere of excitement that characterizes modern biology. In the past decade the frontiers of biological research have been pushed so far forward that enthusiasts are predicting a "break-through" in biological knowledge comparable to that in atomic energy, with consequences which could be even more far-reaching.

The major in zoology reflects the nature of modern biology and is changed thereby. After the introductory course the student has a relatively free choice of courses appropriate to his interests and career plans. Other than the restriction that he must take one course in each of three areas, morphology, physiology, and genetics, any undergraduate or senior-graduate course in zoology may be counted toward the hours required for the major.

Many of the recent advances in biological knowledge have come from the development of new techniques and the application of biochemistry, physical chemistry, physics, and mathematics to biological investigation. As a result, new areas such as biochemical genetics, biophysics, and molecular biology are interdisciplinary. A modern zoologist must obtain both competence and understanding through adequate training in the other sciences. A good major will thus include, *as a minimum*, introductory calculus, a year of physics, and chemistry through organic. Furthermore, a student who wishes to take more advanced courses than these in the natural sciences and mathematics may substitute up to 6 s.h. of them toward the major.

Students who earn scores of 3 or better in the CEEB Advanced Placement examination in Biology or who have completed two or more years of high school biology and wish to qualify for advanced placement, and who anticipate further work in zoology, should take the zoology test administered during Freshman Week. This test is given for advisory purposes.

Students majoring in zoology and selected interested freshmen are invited to participate in a non-credit seminar program which meets in a faculty member's home. Outstanding scientists are invited to lecture informally to this group in various areas of biology.

Opportunities for interested and qualified undergraduates to assist in staff research are available throughout the Department. In the senior year, majors may pursue independent study leading to Graduation with Distinction.

A SUGGESTED READING LIST FOR THE SUMMER

You may want to read the books which are of greatest interest to you and also sample areas of knowledge with which you are less familiar. We strongly recommend that you study the *Report of the National Advisory Commission,* which will serve as background for the Faculty Panel (September 16) and the ensuing discussions in the dormitories.

Report of the National Advisory Commission on Civil Disorder.
(Bantam QZ4273 $1.25)

Boulding, Kenneth S. *The Meaning of the 20th Century.*
(Harper Colophon CN67 $1.45)

Bronowski, Jacob. *Science and Human Values.* Rev. ed.
(Harper Torchbooks TB/505 $1.25)

Cary, Joyce. *Mr. Johnson.*
(Berkley S967 $.75)

Dubos, René. *Mirage of Health.*
(Doubleday Anchor A258 $1.25)

Dürrenmatt, Friedrich. *The Physicists.*
(Evergreen E380 $1.75)

Fletcher, Joseph. *Situation Ethics.*
(Westminster Press 20-0691 $1.95)

Frankl, Viktor E. *Man's Search for Meaning.*
(Washington Square Press W642 $.60)

Goodman, Paul. *Growing Up Absurd.*
(Vintage V32 $1.45)
(Penguin A880 $1.25)
(Delta-Dell 9237 $2.45)

*Hall, Stuart, and Whannel, Paddy. *The Popular Arts.*
(Beacon BP241 $2.95)

Kerr, Clark. *The Uses of the University.*
(Harper Torchbooks TB/1264 $1.25)

Knowles, John. *A Separate Peace.*
(Bantam S3210 $.75)

Lagerkvist, Pär. *The Sibyl.*
(Vintage V240 $1.45)

*McLuhan, Marshall. *Understanding Media.*
(Signet Q3039 $.95)

Price, Reynolds. *A Long and Happy Life.*
(Avon SS8 $.60)

*These books may serve as a preparatory basis for Symposium '68, a three-day conference on the campus during November.

*Steinberg, Charles S., ed. *Mass Media and Communication.* (Hastings House $5.95)

Thruelson, Richard and John Kobler, eds. *Adventures of the Mind.* 1st series. (Vintage V109 $1.45)

Ward, Barbara. *Rich Nations and Poor Nations.* (Norton $1.25)

Williams, Oscar, ed. *A Pocket Book of Modern Verse.* (Washington Square Press W910 $.75)

Most of these books are obtainable at any well-stocked bookshop, but in case of difficulty, order from *The Gothic Bookshop, Box LM, Duke Station, Durham, N. C. 27706.* The books by Cary, Steinberg, and Ward are not available at The Gothic Bookshop but may be purchased at The Book Exchange, 107 W. Chapel Hill Street, Durham, N. C. In either case enclose payment by check or money order, and allow 20 cents per book for packing and postage.

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